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THE NECESSITY FOR UNIFORMITY IN NATIONAL, STATE, AND MUNICIPAL VITAL STATISTICS REPORTS.

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Read before the Joint Session of Sections of Municipal Health Officers and Vital Statistics, American Public Health Association, Washington, D. C., September, 1912.

A very important paper entitled "Misleading Mortality Statistics on Tuberculosis" was read before the recent meeting of the National Assóciation for the Study and Prevention of Tuberculosis by its assistant secretary, Dr. Philip P. Jacobs. I wish this paper, with the permission of the former association, might also be printed in our proceedings, because I believe that it brings forcibly before us, and especially before the municipal health officers now present, some serious discrepancies that ought to be removed. In fact, it represents an alarming condition with respect to the publication of unreliable data, especially in our city reports, that should have been taken up long ago by the Section on Vital Statistics, but which I believe cannot be dealt with to advantage without the practical coöperation of the Section of Municipal Health Officers as well. It is not creditable either to the registration officials of the country or to the state and municipal health officers that these discrepancies should be taken up for the first time publicly by one who is in no wise concerned with the preparation of such statistics, but only with their intelligent use. I do not wish to shirk any responsibility of the Census, but in fact the Census has been endeavoring for quite a number of years, through the organization of registration officials as a section of this Association and the adoption of Rules of Statistical Practice thereby, through the use of

monthly check lists, so that the total transcripts received by the Bureau for each month shall agree with the state or city count, and through the publication of Manuals of the International Classification of Deaths, to bring about a greater degree of uniformity in the published results.

The Report on Mortality Statistics, 1909, gives consecutive rates for important causes of death for all the registration states and cities of 8,000 population and over for each of the years 1900 to 1909, and the series is brought up to 1910 by the *Bulletin* for that year. State registrars and municipal sanitary and registration officials can readily make comparisons of these published rates with those given in their reports, and discrepancies of any consequence should rigidly be investigated and corrected. The Census, however, feels that it can stand upon the correctness of its published rates, as based upon the officials returns from state and city officers. In all cases, so far, in which they have been called into question, examination of the original records has shown that the Census figures were correct and that the local rates were in error. There was a degree of apparent injustice, therefore, attaching to Doctor Jacobs's original, and very natural, conclusion, which I believe has been eliminated from his paper, that whereas three sets of official death rates, namely, the federal, state, and municipal, relating to the same city and for the same time, did not agree, therefore *all* were unreliable. It is possible, and I believe it to be true, that where the three sets of figures do not agree, the federal rates may and should be accepted in all cases—and I leave the burden of proof to the contrary to state and city officials—as the correct figures, truly representing the official transcripts made by the state and city authorities, and compiled, with the utmost care and checking for possible errors of statistical procedure, according to the rules of the International classification of causes of death (First Revision, 1900–1909; Second Revison, 1910–). But of course the Census compilation can not be more correct than the transcripts received, and if state or local officials failed to transmit all the deaths on file with them, or perhaps duplicated certain transcripts, the results will be in error as compared with the original records.

As a matter of fact, slight differences must occur in any two or more independent statistical compilations of the same data. When made in different offices and involving any considerable number of deaths, it is practically impossible that the results should be in exact numerical agreement. Vital statisticians are not the only public health workers to be troubled by discrepancies arising from differences in methods. We have felt greatly pleased when our certified milk contained less than 10,000 bacteria to the cubic centimeter according to the ordinary plating methods of examination, but now we learn, from the report of the Commission on Milk Standards of the New York Milk Committee, that 5,000 bacteria by the plate method may correspond to 700,000 by the method of centri-

fugalization and 5,000,000 by the Prescott-Breed method of microscopic examination. Thank Heaven we have no such alarming discrepancies to reconcile in our vital statistics, although Doctor Jacobs finds that the tuberculosis rate for Binghamton, N. Y., in 1902, was 219.4 per 100,000 by the Census report, 48.7 by the state report, and 197.4 by the city report; likewise, for 1909, the figures disagreed, being as follows: Census, 124.5; state, 75.9; city, 113.9. (I have only taken a single city for two of the years showing the most marked differences, and have also written the rates per 100,000 instead of per 10,000.)

In this specific case, which may be taken as a type of numerous others, the low rate given by the state report, or rather computed by Doctor Jacobs on the basis of the Census estimates of population, arose from a clerical error in a certain table by which the number of deaths from consumption in Binghamton was given as 26 instead of 90, as shown by the Census and also by the state report from summation of the tables of deaths by months. The exact agreement would not necessarily follow because the Census deaths were those that actually occurred during the year 1902, while the state figures related to a compilation of reported deaths up to the 15th of the following month and one perhaps not closed until some time thereafter, so that some deaths in January, 1902, might be omitted and some deaths in January, 1903, might be included in the total for the year 1902. Ordinarily these would offset each other and the difference between the reported deaths and the deaths that actually occurred would be of no consequence. Reference to the main table of the city report shows that the number of deaths compiled from pulmonary consumption was 89 (216.9 per 100,000), a number which is necessary to balance the table, although the detail by months foots only to 84 (204.7 per 100,000). Doctor Jacobs's rate of 197.4 would correspond to 81 deaths. His figures were not obtained from examination of the official reports for the year, but were furnished by the officials upon a blank sent them for this purpose. A manuscript table prepared by Dr. Daniel S. Burr, health officer of Binghamton in 1909, gives the deaths from tuberculosis of the lungs in 1902 as 81; the detail by months does not agree with that printed in the report for 1902, sometimes one and sometimes the other being in excess. Thus for April, the manuscript report gives 12 deaths while the printed report gave only 7. To ascertain the reason for these differences would require an examination of the original certificates of death.

For the year 1909, the matter is further complicated by the practice of the state office, beginning about 1905, of rejecting deaths in state institutions. In the Census compilations, and also in the city tables, all deaths that occurred in the city are included, in accordance with the Rules of Statistical Practice approved by the American Public Health Association. The Census showed 59 deaths, the state compilation (exclusive of deaths

in the State Hospital for the Insane), 36, and the city, 54. The difference between the Census and city figures may perhaps be due to variations in the assignment of joint causes. The comparison of the discrepancies in these two instances illustrates well, however, the perplexities that the statistical student must encounter and the impossibility of reconciling them except by an examination of the original records. The comparison is also rendered unreliable in some cases by failure to differentiate deaths from tuberculosis (all forms) and deaths from tuberculosis of the lungs, although I believe that the Census figures are correct according to the transcripts supplied, I should hesitate to denounce other figures as certainly incorrect until I have been able to check up the original records. This, of course, it has been impossible to do, except in a few cases, with the force available, and I therefore wish to urge upon this meeting, both from the point of view of vital statisticians and as general sanitary administrators, that some work be actively undertaken on this important subject. We can not afford to have our data impeached, if trustworthy; and if the figures are wrong and the compilations incorrect in any instance, then the sooner that correct figures are obtained, the better. Compliance with the Rules of Statistical Practice adopted by this Association is essential, and also with the standard methods of classification of causes of death. Some offices are ignorant of, or disregard, these rules. Deaths are excluded from their general tables for a variety of reasons, none of which have yet been sanctioned by the Section on Vital Statistics. Populations continue to be estimated by various methods, and death rates are stated in a variety of forms. I believe that it would be wise to appoint an active committee to report on the degree to which the Rules of Statistical Practice are carried out in the various state and city offices, and that an effort should be made to bring up our data to a fully comparable standard.

I have prepared a memorandum as a supplement to this paper in order to show some of the possible causes of discrepancies between the death rates published by various offices. Incidentally it shows the necessity of thorough training in the technique of statistics, greater stability and responsibility for the position of city registrar, and the entire removal of this work, together with all other public health work, from the field of politics. A man subject to partisan appointment and removal can not be expected to fit himself for permanent, progressive service, and can hardly be blamed if the results of his untrained efforts at the compilation of causes of death are sometimes weird.

MEMORANDUM ON SOME POSSIBLE CAUSES OF DISCREPANCIES BETWEEN DEATH RATES PUBLISHED BY THE CENSUS BUREAU AND THOSE PUBLISHED IN STATE AND CITY REPORTS.

The death rate is obtained by dividing the number of deaths by the population, the resulting fraction being multiplied by 1,000, 10,000, 100,000, or 1,000,000 in order to afford a more convenient form for statistical use. A difference in rates shown for the same area and time may be due to a difference in population, in the deaths, or in both population and deaths. Discrepancies due to population may readily be adjusted by the adoption of a uniform basis of estimation (see below), but those due to differences in the compilations of deaths or causes of death are more serious and may require a recompilation or critical examination of the original records.

Population.

The American Public Health Association has recommended ([A.P.H.A.] Rule No. 44 of 1908) relative to the constitution of standard tables of vital statistics that "Every state or city registration office publishing an annual (or biennial) report should include therein a table showing the population (as estimated by the United States Census Bureau for intercensal years). . . . "

Hence, the Census estimates of population may be taken as the standard and it is incumbent upon each state and city office to use them, or at least to explain why any other estimate is employed. As the rule was adopted as recently as 1908, it is true that some offices have not yet put it into force, and it would not, of course, affect the rates taken from the reports published prior to that time. The Census estimates of population may be found in the annual reports on Mortality Statistics, and advance estimates are always supplied to state or city offices upon request for their current reports.

Census estimates of population are made uniformly according to the arithmetical method or that of the average annual increase between the last two censuses. They are of two distinct kinds, (a) postcensal or provisional estimates made for years subsequent to the last census, *e. g.*, for the years 1901, 1902, 1903, and 1904 as printed in the annual reports for those years (Mortality Statistics: 1900–1904), and (b) intercensal or final estimates interpolated between two census years, *e.g.*, those for the years 1901, 1902, 1903, and 1904 as printed in the annual report for 1905 after the results of the state censuses of 1905 were available. No estimates were made for the census years 1900 and 1905 (for the group of states having state censuses). In a similar way postcensal estimates were carried on for the years 1906, 1907, and 1908, based either on the censuses of 1890 and 1900 or 1900 and 1905 for those states with interdecennial censuses.

All estimates, as well as the populations for census years, were as of June 1 up to and including the annual report for 1908.

The report for 1909, which was prepared after the census of 1910 was available, contained an interpolated intercensal estimate for that year and also revised estimates of population for all preceding postcensal years since, but not including, the last preceding state or federal census. These estimates were, for the first time, made as of the middle of the year (July 1), and not as of June 1. This change was necessary on account of the change of date of the last census from June 1 to April 15, thus rendering it expedient to go upon a midyear basis of estimation in accordance with the general practice of other countries. But the population figures of the census of 1900 and also of the states having censuses in 1905 (Michigan, 1904), together with estimates interpolated between the censuses of 1900 and 1905, were left unchanged as of June 1, the slight difference not warranting a change in what might be regarded as established estimates.

Hence in comparing Census, state, and city estimates, regard must be had to the time when they were made. Some differences from the Census estimates may be due to the use of various methods:

(1) No estimate, rates being based on last census.

(2) Estimate by geometrical method, assuming a constant *rate* of increase.

(3) Estimate based on school census.

(4) Estimate based on names in directory.

(5) Estimate based on increase in number of dwellings, water rates, etc.

(6) Estimate based on a sanguine and optimistic faith in the rapid growth of the city. Generally in round numbers and subject to a sudden collapse after the next census is taken; the erroneous rates are not always revised.

(7) Estimate by arithmetical method but not on midyear basis.

(8) Census method, but postcensal estimates and rates based thereon not revised after next census becomes available.

(9) Use of police census or special enumeration of population.

Deaths.

It is evident that in the statement of the total number of deaths from all causes that have occurred in a given area for a given time, the federal, state, and city reports ought to be in exact agreement. The Census compilation follows strictly the Rules of Statistical Practice approved by the American Public Health Association and presents in its tables, so far as the transcripts show, the exact number of deaths, exclusive of *true* stillbirths, but not excluding deaths for any other reason, that actually occurred during the time stated. The desirability of omitting certain deaths of non-residents may be admitted, but until definite rules have been for-

mulated—and the matter has been before the Section on Vital Statistics for several years without decisive action—it would only lead to confusion to make the attempt in tables intended for general comparisons of mortality. In certain reports wholly unauthorized omissions have been made, which were entirely unknown until the compilation of deaths by minute divisions of ages during the earliest period of infancy revealed them. If exclusions of any kind are made in a city report, the fact and the exact nature of the deaths excluded should be plainly stated, as required by [APHA] Rule No. 14 of 1908. Every office sending transcripts to the Census is required to certify, both for the total number and the number each month, that the transcripts are complete according to the standard rules, and it is only by neglect or lack of comprehension of the rules and instructions that any deaths should be omitted.

Some possible causes of discrepancy in state or city reports as compared with the Census figures for total deaths may be due to:

(1) Improper inclusions of true stillbirths as deaths.

(2) Improper exclusion, as "stillbirths," of children born alive and dying very soon after birth.

(3) Inclusion of stillborn premature births.

(4) Exclusion of premature births that were not stillborn.

(5) Exclusion of deaths of non-residents.

(6) Exclusion of deaths in certain institutions.

(7) Inclusion of deaths of residents dying elsewhere.

(8) Exclusion of deaths from violence.

(9) Loss of originals or transcripts between the city and state office.

(10) Duplication of transcripts between the city and state office.

(11) Omission of transcripts or failure to make transcripts of all deaths for the Census Bureau; such omissions are especially likely to occur in the case of delayed returns from the local registrars to the central office, or even in delayed city returns. The monthly check-list may not show the error because it was compared with the incomplete transcripts, not with the original returns as should be done.

(12) Duplication of transcripts to the Census Bureau.

(13) Elimination of duplicate returns, *i.e.*, correct transcripts of two or more original returns of the same death.

(14) Compilation of deaths as "reported for" a certain time, not as actually occurring during that time.

(15) Compilation of deaths for other than the calendar year.

Causes of Death.

Some of the reasons affecting the agreement with respect to total death may also affect the compilation of individual causes. Other special grounds of difference may be:

(1) Error or voluntary departure from accepted practice in assignment of the cause of death to the International List.

(2) Of course if any other system than the International is used, no agreement can be expected.

(3) Error or bias in selecting the primary cause among two or more causes or conditions reported by the physician.

(4) Failure to change assignments after receipt of corrections.

(5) Failure to transmit corrections.

(6) Illegible transcripts.

(7) Incomplete transcripts.

(8) Use of old classification for 1910 and subsequent years instead of Second Revision of the International List.

(9) Improper or indefinite consolidation in condensed tables of causes of deaths.

In addition to the above, there are, of course, the ordinary clerical and typographical errors to be encountered in preparing statistical MS. and seeing it through the press. All arithmetical operations should be carefully checked and pains should be taken to see that different tables in the same report do not disagree.

THE RELATION OF MORBIDITY REPORTS TO PUBLIC HEALTH ADMINISTRATION.

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Read before the Joint Session of Sections of Municipal Health Officers and Vital Statistics, American Public Health Association, Washington, D. C., September, 1912.

The aim of the sanitarian and the function of the health officer are the prevention of disease. The prevention of disease depends upon three factors: first, a knowledge of the causes of disease and the conditions under which they affect man; second, current information of the occurrence and location of the conditions that produce disease; and third, the application of existing knowledge to the control and eradication of disease wherever it occurs.

The first, a knowledge of the causes of disease and the conditions under which they affect man, is acquired by research and epidemiologic studies. The second, current information of the occurrence and location of the factors producing disease, can be obtained only through the notification of cases of sickness. The third, the application of existing knowledge to the control and eradication of disease, is a matter of efficient public health administration. Any plan for the prevention of disease, the protection of health, the conservation of human vitality, or the prolongation of life must depend for its success upon these three factors, the omission of any one of which renders the others ineffective.

DEPENDENCE OF LOCAL PUBLIC HEALTH WORK UPON MORBIDITY REPORTS.

Given an efficient health department with a knowledge of the causes of morbidity, in so far as these are known, its work will depend essentially upon the extent to which the occurrence of cases of the preventable diseases are made known to it through morbidity reports. While the work of the health officer logically should include the control of all preventable diseases, in the past it has consisted mainly in the control of certain of the communicable ones. The primary factor in preventing the spread of the communicable diseases is a knowledge of the occurrence and location of cases, for each case of a communicable disease constitutes a focus from which the infection may spread and there is no sanitary measure that can be more than partially successful in the absence of a knowledge of the frequency and location of such foci.

The necessity for the reporting of cases of such diseases as cholera, plague, and yellow fever is well recognized.

Typhoid fever is one of the communicable diseases the control of which is most nearly independent of morbidity reports. The installation of an unpolluted water supply usually curtails markedly the prevalence of this disease in cities. And yet pure water alone is not sufficient. There are many examples of cities in which typhoid fever is prevalent in spite of the presence of satisfactory public water. In this disease a knowledge of the occurrence of cases is necessary to locate milk outbreaks, to discover contaminated wells, if such exist, and to prevent the spread of the disease by flies and by contact. Every typhoid fever patient has potential possibilities for harm through the contamination of water and food supplies which may be so far-reaching that it is but proper that an efficient health department should take cognizance of each case.

Tuberculosis will be brought under proper control only after the reporting of cases is universally required and the requirement generally complied with. By far the majority of the cases of this disease receive their infection from some existing human case. Tuberculosis is more or less chronic in character and the patient usually continues as a focus from which the infection may be spread for months and sometimes years. If the disease is to be controlled, the location and activities of those affected must be known that they may be instructed how to conduct themselves so that others may not be unduly endangered, and that those intimately associated with them may be informed regarding the measures necessary for their own protection. It is also important that persons suffering with tuberculosis should not engage in certain occupations when doing so would cause the exposure of others to infection. These things can be accomplished only when the practicing physician reports the cases to the health department.

What is true of the necessity for the reporting of cases of typhoid fever and tuberculosis in the control of these diseases, is to a large measure equally true of the necessity for reporting cases of the other communicable diseases. The manner in which these diseases are spread may differ, the measures to be taken to prevent secondary cases may vary, but a knowledge of the occurrence and location of cases remains of paramount importance.

As regards the communicable diseases, a knowledge of the occurrence of cases is necessary not only to prevent their spread directly from such cases, but also to ascertain the sources of infection, the causes of outbreaks or the reasons for their undue prevalence. Whenever a disease is unusually prevalent or becomes epidemic in a locality, an efficient health department endeavors to find the reasons for it, and inaugurates an epidemiologic investigation. The first step in such an investigation is a study of certain facts regarding the cases that have occurred in order to discover their relationship to each other and the factors that have been operative in pro-

ducing the disease or its spread. Epidemiology consists largely of a study of cases and case-records.

From the standpoint of sanitary administration it is highly desirable that, instead of unusual conditions being necessary as an incentive to epidemiologic studies, every health authority have the means for constantly studying, within its jurisdiction, the movements of disease, the increase and decline of sickness, the factors operative locally in the causation of morbidity, the best methods of prevention and the occasions when special effort is necessary or most effective. This is possible only to the extent that the occurrence of cases is made known to the health department through notification.

Dependence of State, National and International Public Health Work upon Morbidity Reports.

Although the most important function of morbidity reports is the information they give to the local health department having immediate jurisdiction, this constitutes only a part of their usefulness. The occurrence and prevalence of disease in a city, township or county has an important bearing on the welfare of every other city, township, and county within a state, and it is only proper that each community should be kept currently informed of the existing prevalence of disease in every other community within the state. This is best accomplished through the state department of health. In most of our states the laws require that local authorities shall report the occurrence of certain diseases to the state department. It is only by this means that a state department of health can keep informed of the sanitary conditions and the prevalence of disease throughout its jurisdiction. Without such information a state department of health cannot perform its most important functions and constitutes a health department largely in name only.

Nor does the information regarding the prevalence of disease required by a state health department in the proper protection of the sanitary welfare of the state end with a knowledge of the occurrence of disease within its own territory. Just as it is important that a city health department shall know of the occurrence of disease in neighboring cities and communities, so is it important that state health departments shall know of the occurrence and prevalence of disease in neighboring states. This includes all the states, for rapid transit has made California and Maine as truly neighbors as were New York and Massachusetts a century ago.

As the communities within a state report to the state department for its information and for the information of each other, so for the information of state authorities it is necessary that the state health departments report to some common agency, national in scope, the occurrence of diseases in their respective territories.

Action was taken at the last annual conference of state and territorial health officers with the United States Public Health Service, having as its object a coöperative plan by which the state authorities are to keep the Public Health Service informed regarding the occurrence and prevalence of certain diseases within their respective states. This information will be published in the public health reports for the benefit of all state and territorial health authorities. When there is reason for doing so, as in the event of the acute outbreak of certain diseases, the state health officers will be advised of such outbreak by telegraph. A copy of the resolution adopted by the conference will be found on page 427.

The usefulness of morbidity reports extends still further. The need for the notification of the occurrence of certain diseases extends even to international sanitary administration. If a country wishes to prevent the importation of diseases from other countries, it must know the localities in foreign countries where these diseases occur.

The international sanitary convention signed at Paris in 1903, provides that each government shall promptly notify the other signatory nations whenever cases of cholera or plague appear anywhere within its territory. These primary notifications are to be followed by detailed reports of the measures being taken to control the disease and by reports at least once a week showing the course of the outbreak or epidemic. By this same convention an International Office of Public Hygiene has been established at Paris to furnish to the signatory governments current information regarding sanitary affairs and the prevalence of certain diseases throughout the world. The International Office issues for this purpose a monthly bulletin. The provisions of this convention regarding notification, and a list of the governments signatory thereto will be found on page 429.

The International Sanitary Convention of American Republics concluded at Washington, October 14, 1905, provides that the governments signatory thereto shall give immediate notification of the occurrence of plague, cholera, or yellow fever to the governments of the other nations whenever cases of any of these diseases occur within their respective territories. Subsequent reports of the course of the outbreak are also to be made similar to those provided for by the Paris convention. The terms of the Washington convention are much the same as those of the Paris convention and will be found on page 430.

Thus, it is seen that a knowledge of the occurrence and prevalence of disease is essential in all public health work, be it city or town, state or national; that in this country the local health officer depends necessarily upon the reports of cases of sickness made by the practicing physician; that the state depends upon the reports furnished by the local authorities; and that the nation depends upon the reports furnished by the states;

and further, that other countries look to our federal government to supply them with needed information.

A complete system for the notification of the preventable diseases would make available current information of the prevalence of these diseases throughout the country. It would show the localities in which they were most common, and in which, therefore, the factors and conditions necessary in causing them existed to the greatest extent. Of the epidemic diseases it would show the occurrence, spread and recession of outbreaks.

The Diseases that Should be Notifiable.

The question arises as to which diseases should be notifiable. It may be safely stated that all diseases should be notifiable of which the notification would be to the sanitary advantage of the community. This would include all preventable diseases and possibly also all diseases the causes or means of spread of which are unknown. The preventable diseases should be notifiable for the occurrence of cases would show the existence of the factors necessary in their causation; if infectious, the location of foci of infection; if not infectious, the existence of factors producing morbidity.

The diseases of which the causes or means of spread are unknown should be reported, as a knowledge of the prevalence and geographic distribution of such diseases and of the conditions under which they occur has proved to be one of the most useful aids in discovering the cause or means of spread.

The Action to be Taken upon Notification of Cases.

The paramount reason for the notification of sickness is that the health authority having jurisdiction may be cognizant of the occurrence of cases, and, therefore, able to inaugurate such measures and precautions as are possible for the protection of the other members of the community from exposure to the disease or from being affected by the same morbid influence. The notification of a case of scarlet fever enables the health officer to protect others from infection from the case notified; the reporting of several cases in persons having a common milk supply may reveal a focus of milk infection and make possible its elimination as a source of further injury; the notification of a case of plague makes possible the more intelligent search for foci of rat infection in a given locality; the reporting of a case of an occupational disease or injury shows the existence of the conditions essential to the production of such disease or injury and indicates the need for remedial measures.

However, unless the health department makes use of the information derived from these notifications in promoting the sanitary welfare of the community, the main object of the notifications remains unaccomplished.

Under these conditions it will be found that the practicing physician will often become negligent in making the required reports. A health department that does not make use of notifications cannot expect the sincere coöperation of the practicing physician, nor can such a department be said to be fulfilling all the functions properly belonging to a health office.

The Physician's Relation to Morbidity Reports and Health Administration.

The primary factor in the securing of morbidity reports is the physician who comes into contact with cases of sickness. Upon him rests the responsibility of notifying the proper authorities of the occurrence of certain diseases. The practicing physician therefore is of fundamental importance in any scheme of public health administration. He is the sanitary outpost who informs the health department of the occurrence of disease and it is only through his reports of cases, and the information derived therefrom, that the health officer can inaugurate proper measures for the protection of the community. No state, city or town can hope to know of the existing prevalence of disease or the condition of the community's health in the absence of such notification.

Physicians have at times appeared to hold lightly their responsibilities in reporting cases of disease required by law to be notified. This has been so undoubtedly because of a lack of appreciation of the importance of and necessities for such notification. Any physician who does not comply with the requirements for the reporting of sickness is not only not a good citizen, but from an ethical standpoint stands convicted of not being interested in the community's welfare and the prevention of disease, inasmuch as he neglects to do his part, which is an essential one. With the great interest that has been shown, especially during the last few years, by the medical profession generally throughout the United States in public health work, the criticism of lack of coöperation on the part of the practicing physician should be an unusual one in this country.

The right of a state to require by law or regulation the notification of cases of sickness by physicians need not be considered. The point has been repeatedly established by the courts. The state in issuing licenses to certain persons permitting them to practice medicine is presumably attempting to eliminate those who are incapable or irresponsible, and by this means to guard the welfare of the community. There are, however, few things that a practitioner could be guilty of that are fraught with so much potential harm or possess so great possibilities for injury to the public welfare as the failure to report cases of the communicable diseases. An unreported case may, because of the absence of proper control, be the cause of secondary cases that might otherwise have been prevented, and it is a rather nice

point of ethics as to whether the physician who neglects to report the primary case is not in some degree responsible for the secondary cases and for any fatalities that may occur among them. It would seem that a physician who violates the law in this way is not a proper person to hold a state license. This attitude has been taken by the legislature of Utah and in that state the statutes specify that whenever any licensed practitioner of medicine is guilty of wilful violation of the law in regard to the reporting of infectious diseases his license shall be revoked. There might be some advantage in a state's granting such a license only after a satisfactory examination of the applicant, not only upon the usual medical subjects, but also upon the state health laws and regulations. The applicant might further be required to certify that he had familiarized himself with these laws and regulations and that he agreed, at all times, faithfully to live up to their requirements. Such a plan would at least be a guarantee that those thus licensed were acquainted with the duties imposed upon them by law.

Or the plan might be carried further and the real status of the physician brought out still more clearly. Practicing physicians have an essential part in every effective plan for health administration. As previously referred to, they constitute the picket line or intelligence department. This relationship to the community might be officially recognized by making every practitioner licensed by the state, a member of a state sanitary reserve corps, subject to active duty under the state department of health whenever his services were needed for the common welfare. When he received his license he might at the same time receive an appointment issued by the state executive making him a member of the sanitary reserve corps and be required to take an appropriate oath of office.

Such an arrangement would undoubtedly be welcomed by the thousands of physicians who have become advocates for more extensive public health work.

ADDENDA.

Resolution Adopted at the Tenth Annual Conference of State and Territorial Health Officers with the United States Public Health Service Regarding State Morbidity Reports.

The tenth annual conference of State and Territorial Health Officers with the Public Health Service in session June 1, 1912, adopted a resolution regarding state morbidity reports. The resolution was presented by the conference committee on morbidity reports of which the members were Dr. Mark W. Richardson, secretary and executive officer, Massachusetts State Board of Health; Dr. Ennion G. Williams, Health Commissioner of Virginia; Dr. S. J. Crumbine, secretary and executive officer, Kansas State Board of Health; Dr. William F. Snow, secretary and executive officer, California State Board of Health; and Dr. R. L. Dixon, secretary and executive officer, Michigan State Board of Health.

The following is a copy of the resolution as adopted:

STATE MORBIDITY REPORTS.

In order to make available to the health authorities of the States, Territories, and insular possessions of the United States, for their use and guidance in the protection of their respective communities, information regarding the prevalence and geographic distribution of certain diseases, and the occurrence of outbreaks and epidemics, be it resolved:

1. That the health authorities of the States, Territories, and insular possessions of the United States, including the District of Columbia, shall notify the Surgeon General of the Public Health and Marine-Hospital Service immediately by telegraph (collect) and letter upon the occurrence of a case or cases of cholera, yellow fever, typhus fever, plague, or Rocky Mountain spotted or tick fever, giving the number and location of cases, and that said authorities shall render monthly reports of the number of cases notified of smallpox, leprosy, scarlet fever, measles, diphtheria, typhoid fever, poliomyelitis, cerebrospinal meningitis, dysentery, Rocky Mountain spotted or tick fever, and other diseases notifiable in their respective jurisdictions; said monthly reports to be made on or before the 20th day of each month for the preceding calendar month, and to give the distribution of cases of smallpox, leprosy, poliomyelitis, cerebrospinal meningitis, Rocky Mountain spotted or tick fever, and typhoid fever, by counties, or by counties and cities, or by towns (townships), or by towns (townships) and cities; and that when in a State one or more cities are excepted by statute, charter, or otherwise from reporting the occurrence of the notifiable diseases to the State department of health, and the State report therefore is exclusive of cases occurring in such cities, the cities thus excluded shall be enumerated.

2. That upon the occurrence of an unusual outbreak, or in the event of a sudden increase in the number of cases of smallpox, scarlet fever, diphtheria, typhoid fever, poliomyelitis, cerebrospinal meningitis, or Rocky Mountain spotted or tick fever in any locality, the Surgeon General of the Public Health and Marine-Hospital Service shall be immediately notified by telegraph (collect) and letter of such unusual outbreak or sudden increase.

3. That in the primary notification of smallpox to local health authorities the date when the patient was last vaccinated and whether the disease is of the benign or virulent type shall be stated; that in all outbreaks of smallpox in which one or more deaths occur a report of such data as can be obtained regarding the origin of the first case or cases and the history of the outbreak shall be made to the Surgeon General after the subsidence of said outbreak; that all reports of cases of smallpox made by the State or other health authorities to the Surgeon General shall be divided into four classes:

(*a*) Those vaccinated within a period of seven years preceding the attack.
(*b*) Those whose last vaccination occurred more than seven years antedating the attack.
(*c*) Those who have never been successfully vaccinated.
(*d*) Those in which no definite history is to be obtained.

4. That in reporting the occurrence of cases of leprosy such data as it is possible to obtain regarding the patient's history shall be given.

5 That the Surgeon General shall, under the direction of the Secretary of the Treasury, pursuant to section 4 of an act approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," compile and publish the reports forwarded in compliance with the foregoing in the Public Health Reports for the information of the health authorities of the several States, Territories, and insular possessions, including the District of Columbia .

INTERNATIONAL SANITARY CONVENTION OF PARIS, 1903.

CHAPTER 1.

PROVISIONS TO BE OBSERVED BY THE COUNTRIES SIGNING THE CONVENTION ON THE APPEARANCE OF PLAGUE OR CHOLERA IN THEIR TERRITORY.

SECTION 1. Notification and subsequent communications to the other countries.

ARTICLE 1. Every government must immediately notify to the other governments the first appearance of recognized cases of plague or cholera in its territory.

ART. 2. Such notification shall be accompanied or very promptly followed by detailed information as to:

(1) where the disease has appeared;

(2) the date of its appearance, its source and its type;

(3) the number of known cases and deaths;

(4) in the case of plague, the presence of that disease or of unusual mortality among rats or mice;

(5) the measures taken immediately on the first appearance of the disease.

ART. 3. The notification and the information prescribed in Articles 1 and 2 shall be supplied to the diplomatic or consular agencies in the capital of the infected country. In the case of countries not represented there, the notification and the information shall be telegraphed direct to the governments of these countries.

ART. 4. The notification and the information prescribed in Articles 1 and 2 shall be forwarded by subsequent communications furnished regularly and in such fashion as to keep the governments informed of the course of the epidemic. These communications shall be made at least once a week, shall be as complete as possible, and shall, in particular, indicate the precautions adopted with a view to prevent spread of the disease. They must set out with precision:

(1) the preventive measures taken in the way of sanitary inspection or of medical investigation, of isolation, and of disinfection;

(2) the measures adopted in the case of outgoing vessels to prevent exportation of the disease, and, particularly, in the case comtemplated in Art. 2 (4), the measures taken against rats.

ART. 5. It is of primary importance that the foregoing provisions be promptly and scrupulously complied with. Notification is of no real value unless every government be itself informed, in time, of cases of plague and cholera and also of doubtful cases occurring in its territory. It cannot therefore be too strongly impressed on the several governments that they should make notification of plague and cholera compulsory, and that they should keep themselves informed as to any unusual mortality among rats or mice, particularly in ports.

ART. 6. It is to be understood that neighboring countries reserve to themselves the right to make special arrangements with the object of organizing direct exchange of information between the principal administrative officers on their frontiers.

* * * * *

The governments signatory to the Paris convention were: United States, Germany, Austria-Hungary, Belgium, Brazil, Spain, France, Great Britain, Greece, Italy, Luxemburg, Montenegro, Netherlands, Persia, Portugal, Roumania, Russia, Servia, Switzerland, Egypt.

Those who later became adherents to the convention are: Mexico and Norway.

INTERNATIONAL SANITARY CONVENTION OF WASHINGTON, 1905.

CHAPTER 1.

REGULATIONS TO BE OBSERVED BY THE POWERS SIGNATORY TO THE CONVENTION AS SOON AS PLAGUE, CHOLERA, OR YELLOW FEVER MAY APPEAR IN THEIR TERRITORY.

SECTION 1. Notification and subsequent communications to other countries.

ARTICLE I. Each government should immediately notify other governments of the first appearance in its territory of authentic cases of plague, cholera, or yellow fever.

ART. II. This notification is to be accompanied, or very promptly followed, by the following additional information:

1. The neighborhood where the disease has appeared.
2. The date of its appearance, its origin, and its form.
3. The number of established cases and the number of deaths.
4. For plague—the existence among rats or mice of plague, or of an unusual mortality, for yellow fever—the existence of stegomyia fasciata in the locality.
5. The measures taken immediately after the first appearance.

ART. III. The notification and the information prescribed in Articles I and II are to be addressed to diplomatic and consular agents in the capital of the infected country; but this is to be construed as not preventing direct communication between officials charged with the public health of the several countries.

For countries which are not thus represented, they are to be transmitted directly by telegraph to the governments of such countries.

ART. IV. The notification and the information prescribed in Articles I and II are to be followed by further communications dispatched in a regular manner in order to keep the governments informed of the progress of the epidemic.

These communications, which are to be made at least once a week, and which are to be as complete as possible, should indicate in detail the precautions taken to prevent the extension of the disease.

They should set forth, first, the prophylactic measures taken relative to sanitary or medical inspection, to isolation, and disinfection; second, the measures taken relative to departing vessels to prevent the exportation of the disease, and, especially under the circumstances mentioned in paragraph 4 of Article II of this section, the measures taken against rats and mosquitoes.

ART. V. The prompt and faithful execution of the preceding provisions is of the very first importance.

The notifications only have a real value if each government is warned in time of cases of plague, cholera, or yellow fever and of suspicious cases of those diseases supervening in its territory. It can not, then, be too strongly recommended to the various governments to make obligatory the declaration of cases of plague, cholera, or yellow fever, and of giving information of all unusual mortality of rats and mice, especially in ports.

ART. VI. It is understood that neighboring countries reserve to themselves the right to make special arrangements with a view to organizing a service of direct information between the chiefs of administration upon the frontiers.

* * * * *

The governments signatory to the Washington convention were: United States, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Mexico, Nicaragua, Peru, Venezuela.

Those who later became adherents to the convention are: Brazil, Colombia, Honduras, Salvador.

MISLEADING MORTALITY STATISTICS ON TUBERCULOSIS.

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Read before the National Association for the Study and Prevention of Tuberculosis, Washington, D. C., May, 1912.

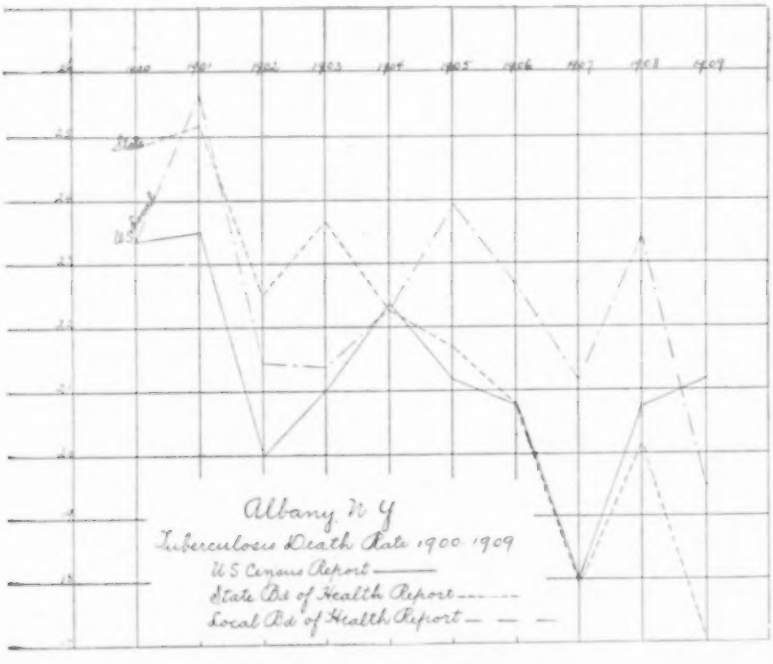
That accurate vital statistics are absolutely necessary to any movement for the betterment of health is simply repeating a truism to which the experience of every anti-tuberculosis worker will bear ample testimony. And to follow this self-evident assertion with a statement to the effect that accurate statistics of the number of deaths from tuberculosis are of fundamental importance in the campaign for the prevention of this disease would be simply stating in general terms the convictions of all who labor in this movement.

But vital statistics, of whatever their nature, whether of deaths, births, marriages, or of living cases of disease, are of little value; indeed, they are pernicious, if they are inaccurate. If there is any one place where accuracy is of prime importance it is in the science of statistics. Without accuracy in this department of public health work it is impossible either to secure an adequate idea of the extent and spread of a disease like tuberculosis, or to measure the amount of progress being made in combating it. How frequently, for example, are we called upon to compare the death rate of one city or group of cities with that of another city or group of cities! Every day the anti-tuberculosis and public heath worker has occasion to refer to the number of deaths from tuberculosis in his city or state, and he is constantly asked to compare the rate in his city with that in other cities, European or American. What shall we say, then, if, on careful investigation, we discover there are apparently numerous inaccuracies in the published mortality statistics of many of our American cities and that some of them are of such a nature as to make the reports of these cities of little or no value whatever?

While attempting to compare the death rates from tuberculosis of some of our American cities two years ago, I discovered, much to my surprise, that there were considerable differences between the number of deaths from this disease in certain cities as reported by the local health authorities and by the United States Bureau of the Census. In some cases I found that the differences were so marked as to vitiate absolutely any of the reported

death rates for comparative purposes. This led me to look into this matter more carefully, with the result that now, after over two years of study, I feel that, before using the published mortality figures of many of our American cities, great care should be taken to ascertain their accuracy. It is my purpose to show in this paper some of the most striking inaccuracies or differences discovered in this study, and to indicate in a general way some of the possible reasons for these variations. My paper will not be an attempt to explain these differences in detail, but it will be rather an effort to show that such differences do exist.

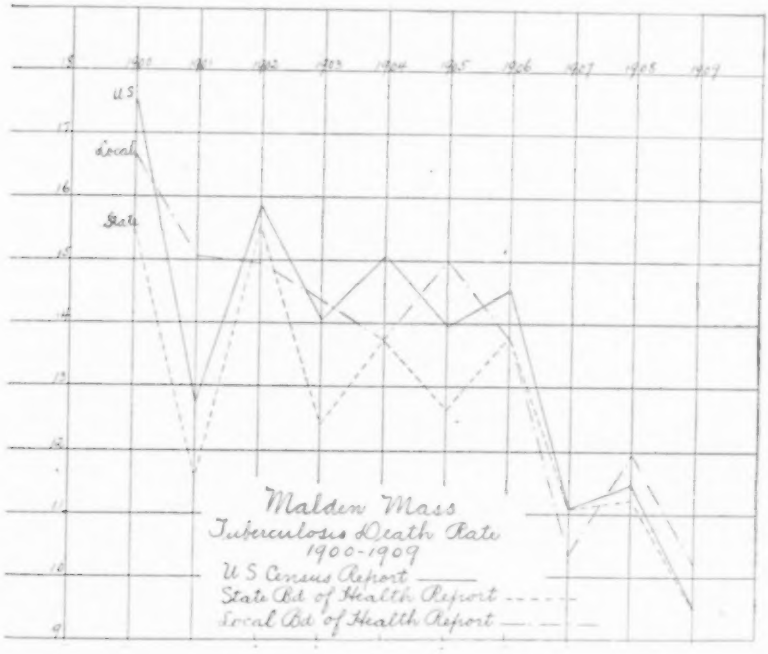
In order that I might not be accused of selecting certain cities in un-



favorable portions of the country to prove a point, I have chosen the cities having a population of 30,000 and over in the states of New York, Massachusetts, Connecticut, New Jersey, Rhode Island, and Maryland. These states, as you will note, are among the oldest registration states in the country, and presumably have the best registration cities. The figures used, moreover, were for the decade 1900 to 1909, thus avoiding the danger of going too far back for data. The figures reported in this paper will be for a group of thirteen cities in Massachusetts and ten cities in New York. The methods in which the data for the investigation were secured will be presented first; a few illustrations of the differences in death

rates next; and, finally, a presentation of the possible reasons for variation.

For the purpose of securing the data for this study, separate and independent blanks were sent to each of the city health boards, and also to the state health board in each state. They were asked to report the total number of deaths from tuberculosis (all forms) for the decade 1900 to 1909 by years. In each case, whether state or local, the figures given were verified by the printed reports where there were any. In addition to these figures, similar data were obtained through the annual reports on mortality statistics, published by the Bureau of the Census only since 1900. All of these data, including the number of deaths for all causes



and the number of deaths from tuberculosis, were transferred to cards, the reports from the three sources, United States Census, State Health Board, and Local Health Boards, being arranged side by side for each year. The discrepancies and differences between the three sources of reporting were at once apparent.

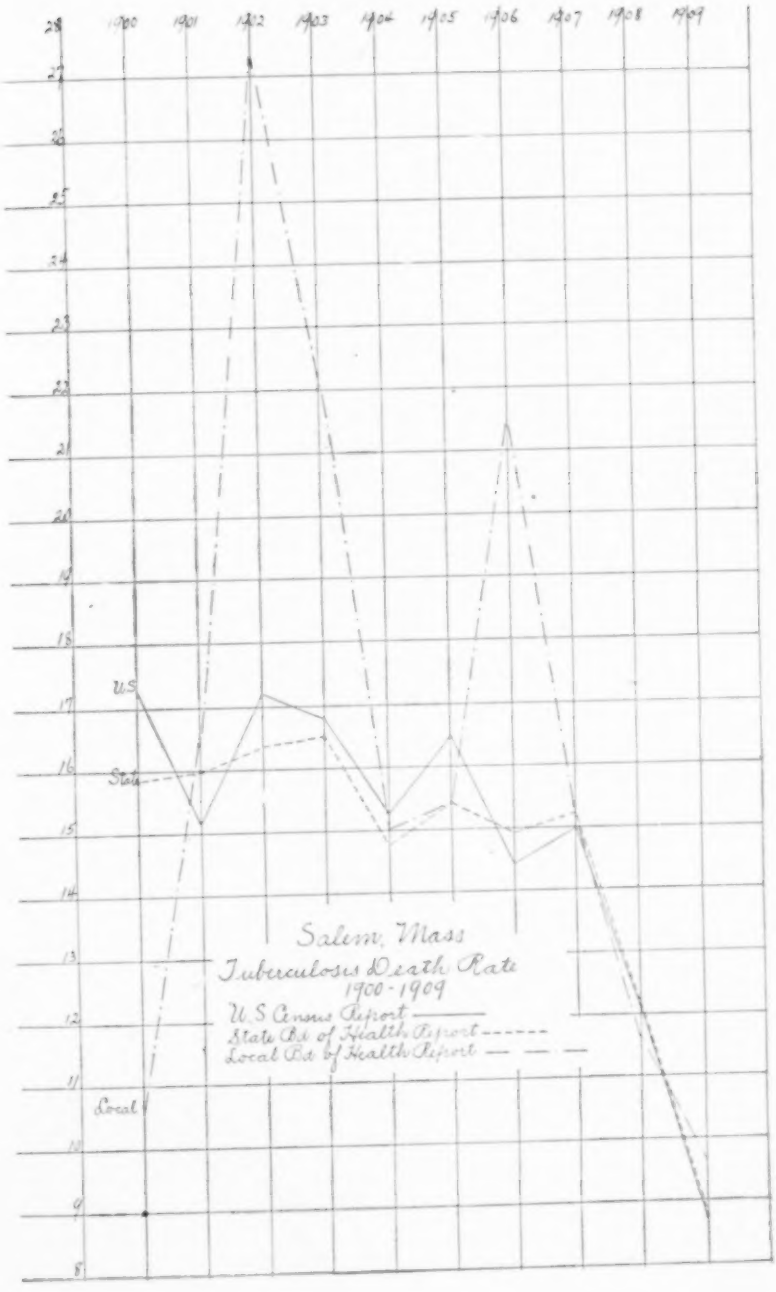
When, however, the death rates were computed from each source, the differences were much more marked. (The United States census population figures and the arithmetical method of determining the increase in population, used by the Bureau of the Census, were adopted in computing death rates, corrections being made wherever a population could be ob-

tained in 1905 from a state census.) These death rates have been plotted for each source for the cities in Massachusetts and New York, and they give some interesting proofs of the misleading character of many of our published mortality figures.

It is significant that in not one of the forty cities for which data have been secured are the figures given by any two of the three sources reporting identical for three consecutive years. The degree of variation is not the same, for in some cases the differences are very slight and superficial, but in others they are so great that it is impossible for any one to determine from them what the true death rate in such cities in certain years should be without having recourse to the original death certificates. Furthermore, the differences are not constant as to any single source, even in a given city. In one or two instances, as in Boston, for example, the relation of the three sources remains fairly constant. In most of the cities, however, the mortality curves from the three sources for the ten-year period cross each other in almost every conceivable manner. In a given year in a certain city, as in Albany in 1904, the rates from the three sources will be practically identical, while in the very next year the difference will be marked—in this case 21.16 per 10,000 population for the census, 21.67 for the state, and 23.92 for the local authorities. In 1909 the census rate in this same city was 21.15, the state 17.04, and the local 19.44. In Cambridge, Mass., to cite another instance, the rates from the three sources were very nearly the same in 1904, but after that year the local rate declines very rapidly, while the state and census rates go up with even greater rapidity until, in 1909, the census rate is 27.10, the state 27.38, while the local is only 15.48. The accompanying tables and diagrams will illustrate these points.

If we call the average death rate of the three sources in each year 100 and take the ratios of each of the rates from the various sources in each year to this average, we may see more clearly, perhaps, how serious a matter some of the differences are. In the city of Binghamton, N. Y., for instance, deviations from the average range all the way from 31.2, or nearly 70 below the average, according to the state figures, to 140.6 in the same year, according to the Census figures. Or take Fall River, Mass., where the deviations from the average range from 88.5 in 1903 according to the census figures to 121.9, according to local figures.

As to the reasons for these apparent differences between the published death rates from the various sources, I am unable to state with any degree of exactness. We may, however, at the present time be able to suggest some possible causes for the wide range of differences, without attempting to explain in detail the variations in any particular city.


1900
1901
1902
1903
1904
1905
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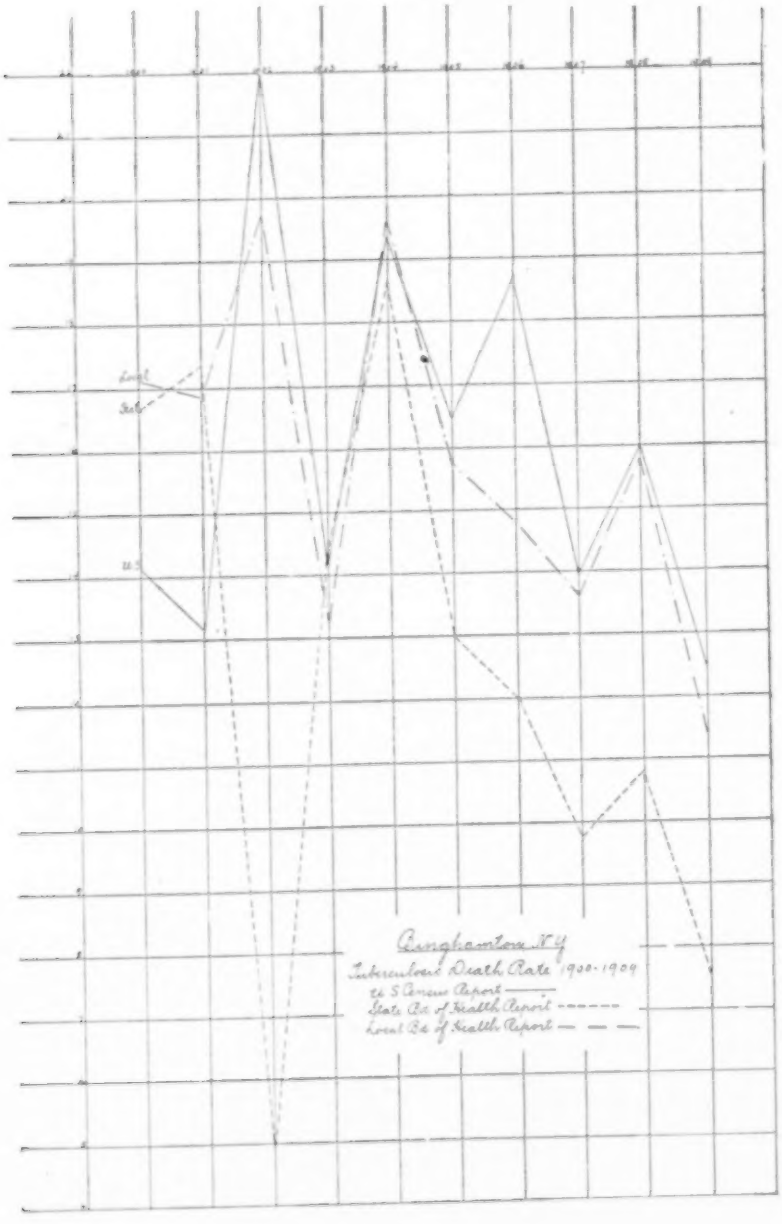
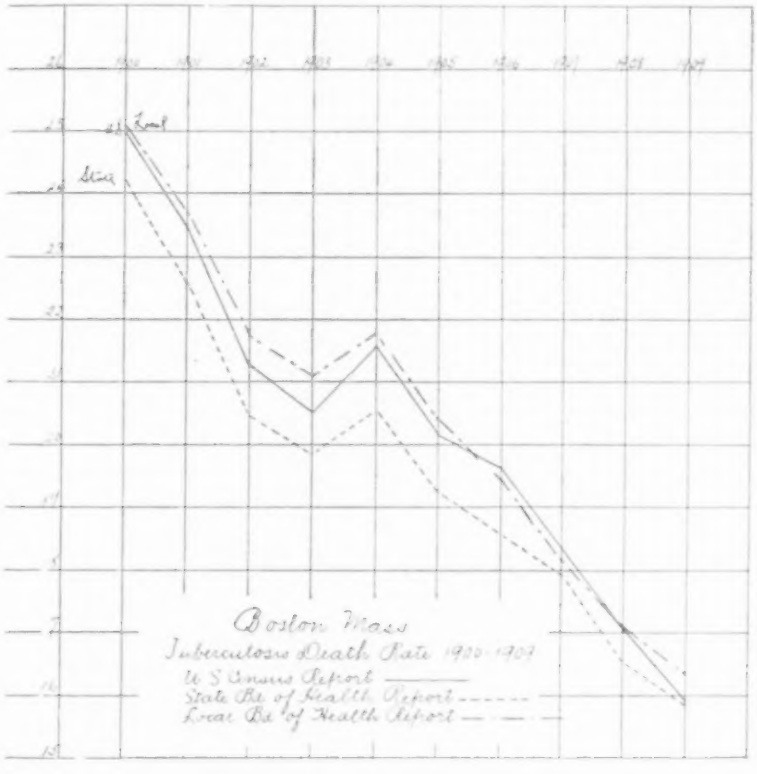
U.S.
State
Local
Salem, Mass
Tuberculosis Death Rate
1900-1909
U.S Census Report
State Bd of Health Report
Local Bd of Health Report


Binghamton N.Y.
Tuberculosis Death Rate 1900-1909
U.S. Census Report
State Bd of Health Report
Local Bd of Health Report

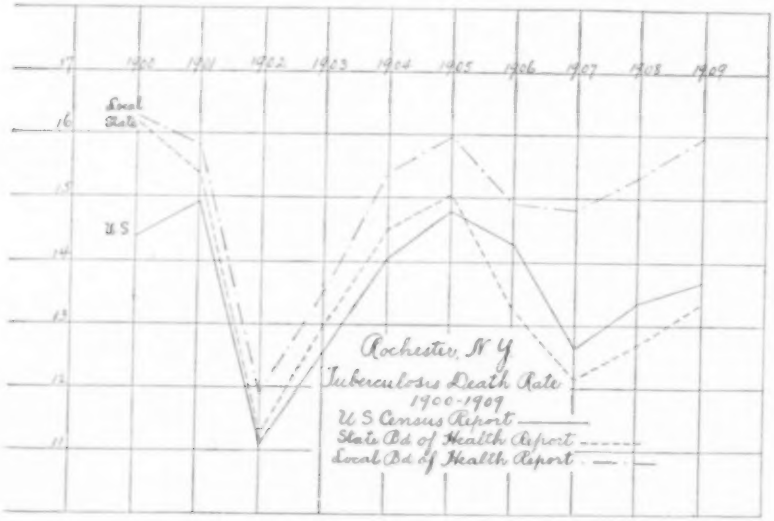
Probably one of the most obvious reasons for differences in reported figures may be grouped under the heading of typographical errors. This cause would seem to account for a number of the minor differences in figures, and in one case at least to one figure of considerable importance. I refer to the death rate in Binghamton, N. Y., for 1902, which is 4.87 according to the state figures. The number of deaths upon which this figure as given in the yearly report of causes of death is based is evidently



a typographical error, as it does not compare with the sum of the deaths by causes as given in Binghamton according to the monthly reports for 1902 (see pp. 759 and 796, N. Y. S. D. of H. Report, 1902). It is highly probable that in cases where so many tables are involved some errors of a purely clerical or typographical nature will creep in.

A second obvious group of causes relates to the methods of classification of the causes of death. The Manual of the International List of Causes of Death, published by the Bureau of the Census (pp. 58–61), contains a list

of over two hundred possible designations of diseases which may be included under some form of tuberculosis. The detailed international list of causes gives eight different causes under tuberculosis, namely, tuberculosis of the lungs; acute miliary tuberculosis; tuberculous meningitis; abdominal tuberculosis; Pott's disease; white swellings; tuberculosis of other organs; and disseminated tuberculosis. The abridged international list of causes of death condenses these eight causes under three heads, namely, tuberculosis of the lungs; tuberculous meningitis, and other forms of tuberculosis. This is by far the most common form used in general practice by local health boards, where any attempts to adopt the international classification has been made.

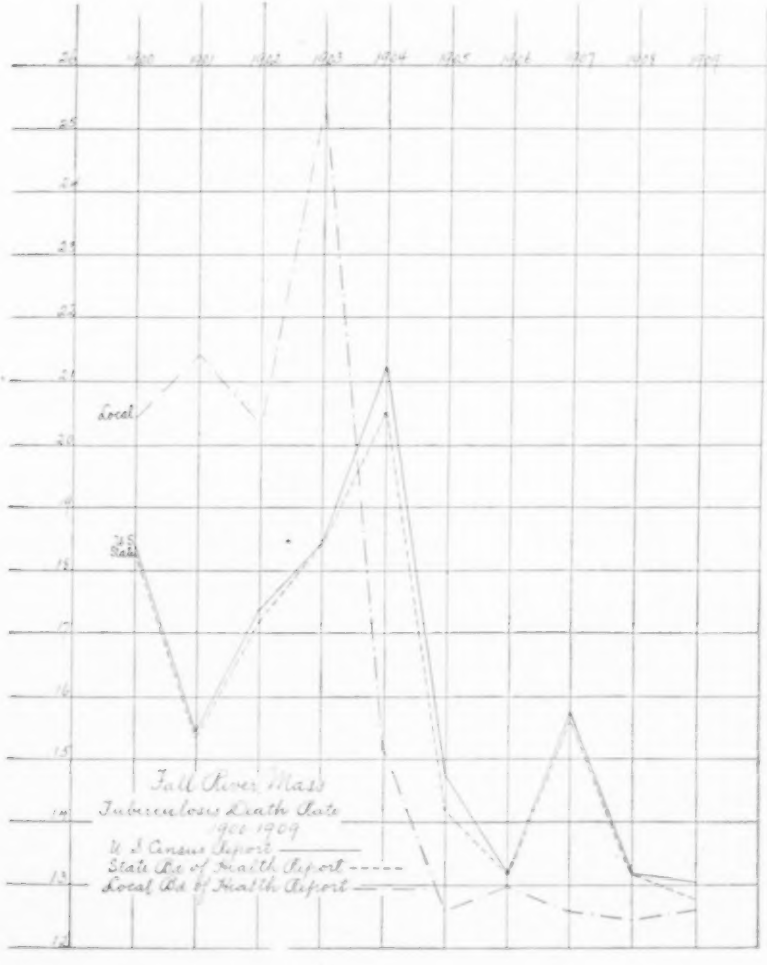


When one takes into consideration the numerous personal factors which enter into the filing of death certificates, it is not remarkable that there should be a wide range in the classification of causes of death, and that some certificates may be grouped under three or more different heads according to the number of agencies engaged in the compilation of statistics from them. Thus, for instance, in a pamphlet issued for local registrars by the Bureau of the Census, entitled "Practical Registration Methods," a few of the more common indefinite terms frequently used by physicians in stating causes of death are given (p. 17 *et seq.*). A few concrete examples will show at a glance how much must be left to the discretion and judgment of the agency compiling the statistics.

"Bad cold," for example, may be bronchitis, pneumonia, or, more probably, pulmonary tuberculosis. The term "chronic bronchitis," the Census Bureau states, "frequently disguises pulmonary tuberculosis." "Chronic

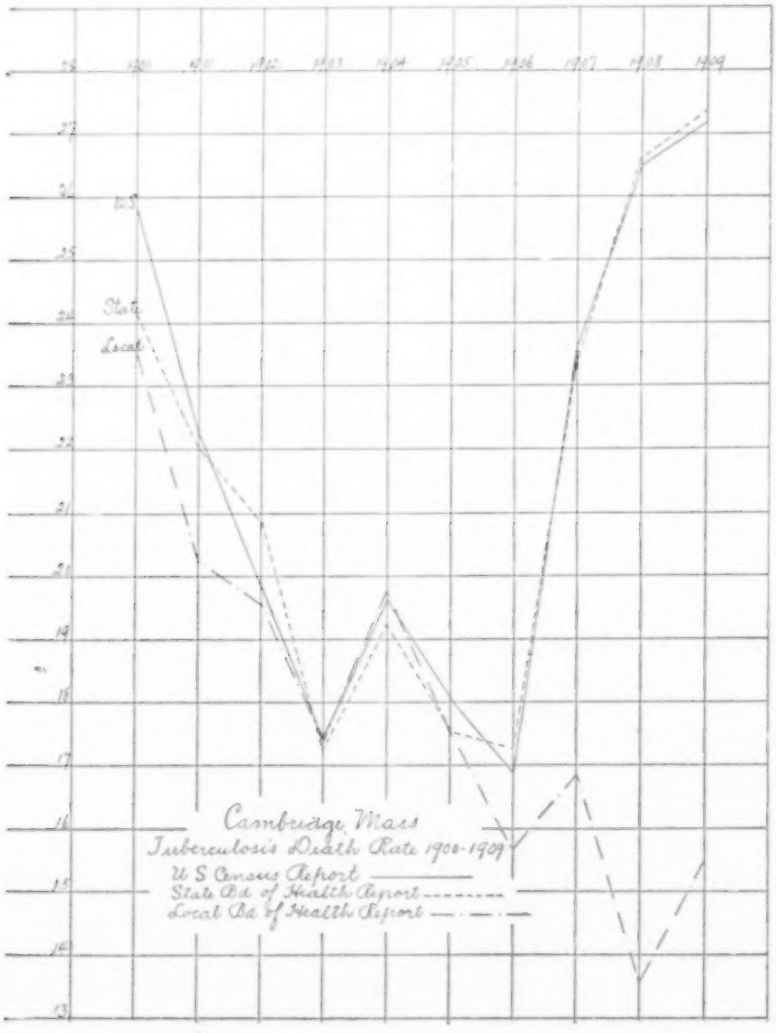
pneumonia" is used in a similar manner. Such terms as "filling up of lungs," "gradual decay," "hemoptysis," "hemorrhage of lungs," "lung trouble," "scrofula," "menigitis," or "spinal trouble" are frequently used, either intentionally to deceive or through lack of sufficient information, when tuberculosis in some form is meant.

If a local registrar once accepts such a faulty certificate, very little can be done either by the State Board of Health or the Bureau of the Census to secure the additional information needed, in order that the true cause of death may be properly tabulated. Some efforts are being made by the Bureau of the Census to correct these errors, but the lack of funds to carry on the detailed correspondence necessary usually prohibits such action on a large scale. The obvious responsibility lies with the local registrar, who should not accept a faulty certificate, and who should withhold

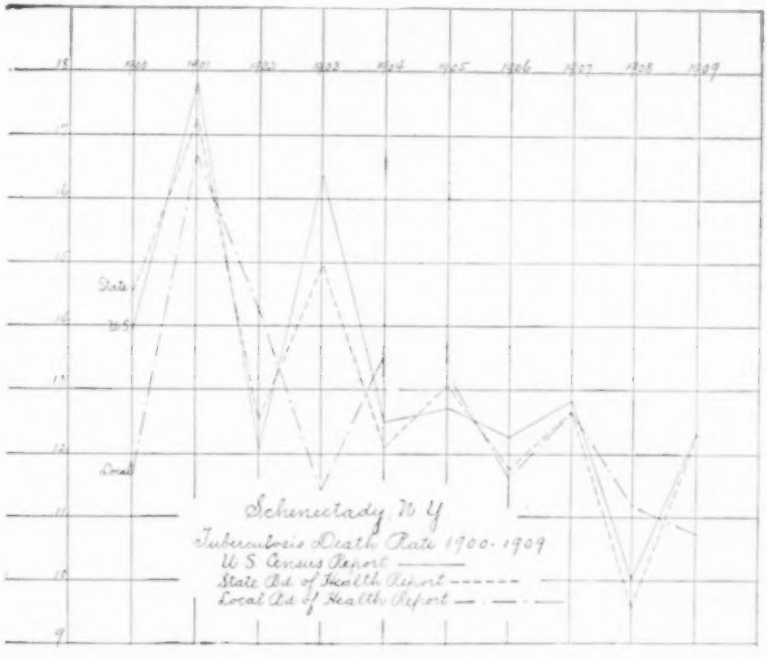


the burial permit until the proper information is filed. He alone can compel the local physician to state his causes of death accurately.

A third reason for many of the serious differences occurring between the published death rates of certain cities from the three sources we have mentioned lies in the exclusion or inclusion, as the case may be, of non-residents. The proper method, as adopted by the Bureau of the Census, is to include in the general tables all deaths in the city or district in which they occur. If it is desired to eliminate them, this may be done in special tables or columns or by footnotes. While I have not attempted to study the various figures with a view to determining where this cause would apply, from general knowledge of local conditions and other information at hand I can



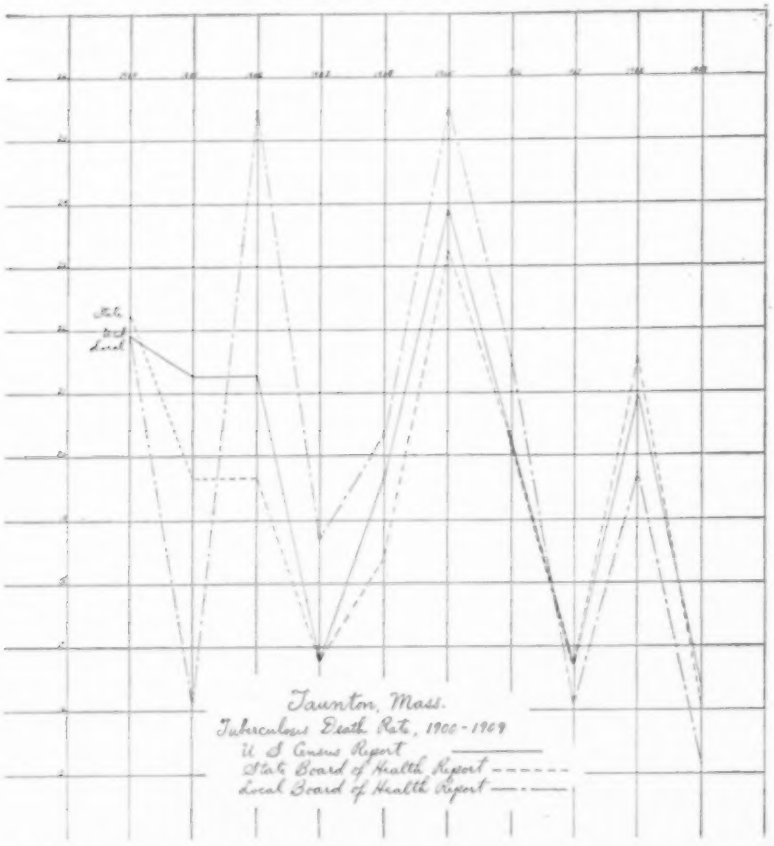
readily see where the death rates in many cities would be seriously affected. For instance, the local figures for Cambridge for the last three years of the decade exclude a considerable number of non-residents, which, had they been included, would have altered the death rate materially. The local health officer, however, while he mentions the number of deaths from tuberculosis of non-residents in his detailed classification of causes of death, in a table showing comparative death rates for different years and different diseases (p. 11, 1909–10), excludes these deaths without any mention of the fact. It is undoubtedly true also, from the *prima facie* evidence in Binghamton, Albany, or Rochester, for example, that the deaths of non-residents have been included in some years in one or more of the three sources



reporting, and that they have been excluded in other years and by other sources. In a city where there is a large state institution or where there are a number of general hospitals, this cause of difference may be very prominent.

Still another obvious reason for differences in the three sources of mortality statistics lies in the varying dates of ending of the fiscal years. The census figures are for the calendar year, and in most cases the state figures are for a similar period. The local years vary, however, considerably. In some cities they coincide with the calendar year and in others they may begin on October 1, March 1, or May 1, in accordance with certain fixed customs or ordinances. This will affect mortality statistics considerably, though not so much as some of the other reasons mentioned.

These are only a few of the obvious reasons for the discrepancies we have mentioned. It is equally obvious that uniformity is desirable above everything else in the reporting, registering, and classifying of mortality data, particularly with reference to tuberculosis. The Bureau of the Census, with its limited power and appropriation, is doing everything it can to secure uniformity. Its own mortality statistics are all compiled after uniform methods, and they are, therefore, the most reliable of any published in this country, especially for comparative purposes. Much needs to be done in the way of correcting faulty reports from physicians and faulty records by


Taunton, Mass.
Tuberculosis Death Rate, 1900-1909
U. S. Census Report
State Board of Health Report
Local Board of Health Report

local and state registrars, and this, too, the Census Bureau and the various state boards of health are undertaking. The permanent Bureau of the Census was established in 1900, and the first manual of the causes of death was issued in 1902. Consequently, the effort to secure uniformity is still in its incipiency.

It is hoped, however, that before the end of another decade mortality statistics in our American cities will be comparable, from whatever source they are taken.

The detailed tables from which the data for this report were taken follow:

DEATH-RATES FROM TUBERCULOSIS IN NINETEEN MASSACHUSETTS CITIES, COMPUTED FROM THREE SOURCES OF REPORTING: UNITED STATES BUREAU OF THE CENSUS, STATE BOARD OF HEALTH, AND LOCAL BOARDS OF HEALTH: 1900–1909 INCLUSIVE

City	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Boston:										
U. S.	24.98	23.44	21.23	20.51	21.58	20.16	19.64	18.37	17.03	15.92
State	24.21	22.56	20.46	19.86	20.56	19.23	18.57	17.93	16.51	15.84
Local	25.09	23.71	21.70	21.10	21.75	20.39	19.41	18.19	17.08	16.35
Brockton:										
U. S.	18.97	15.86	16.45	11.85	12.33	14.02	9.87	8.55	9.95	8.35
State	17.22	16.34	16.92	12.30	11.89	14.02	10.07	7.77	9.76	8.17
Local	19.47	17.06	17.61	14.32	14.92	16.74	11.08	9.91	9.57	8.17
Cambridge:										
U. S.	24.81	22.26	19.87	17.43	19.62	18.06	16.88	23.60	26.50	27.18
State	24.16	22.04	20.19	17.22	19.21	17.55	17.28	23.40	26.60	27.38
Local	22.53	20.22	19.55	17.43	19.73	17.55	15.66	16.83	13.54	15.48
Chelsea:										
U. S.	18.78	17.28	17.53	20.55	22.38	17.70	17.34	16.15	12.79	11.37
State	18.78	17.00	17.82	18.33	20.19	15.55	17.34	16.15	12.21	11.07
Local	19.96	17.28	18.95	18.89	20.74	16.09	18.72	16.15	13.95	12.86
Fall River:										
U. S.	18.41	15.42	17.39	18.41	21.22	14.75	13.18	15.74	13.17	13.03
State	18.31	15.33	17.20	18.50	20.55	14.18	13.18	15.65	13.17	12.78
Local	20.41	21.42	20.43	25.33	15.15	12.58	12.99	12.68	12.45	12.60
Fitchburg:										
U. S.	9.83	12.25	10.89	12.34	10.70	8.78	12.06	13.45	10.02	6.23
State	9.83	11.62	10.89	12.95	10.70	9.09	12.06	12.87	10.02	6.78
Local	10.15	11.94	10.89	12.03	11.00	8.78	11.77	12.87	9.46	6.51
Haverhill:										
U. S.	18.29	23.86	15.76	16.50	16.45	19.03	14.32	15.86	13.70	12.36
State	17.75	23.86	14.16	16.21	16.18	19.03	13.04	16.11	13.22	11.43
Local	17.75	19.84	13.89	14.59	15.92	17.71	14.07	16.11	13.22	12.59
Holyoke:										
U. S.	19.91	18.04	16.67	15.34	19.96	16.22	13.39	16.77	15.38	15.30
State	20.13	18.04	16.25	14.72	17.32	14.22	12.62	16.39	15.01	15.30
Local	19.25	18.90	16.46	14.32	21.19	15.92	11.12	16.96	15.01	14.06
Lawrence:										
U. S.	18.70	16.24	17.39	15.66	16.78	16.27	14.87	15.18	13.32	15.83
State	18.54	16.86	16.32	17.45	16.19	15.27	14.75	14.26	13.32	15.95
Local	18.22	17.16	17.20	17.60	17.07	16.84	14.61	15.44	15.83	18.61
Lowell:										
U. S.	19.27	16.64	16.43	13.59	14.12	15.39	15.43	15.46	12.18	12.01
State	19.06	16.85	16.22	13.06	13.28	15.60	14.71	15.46	12.28	12.11
Local	19.59	17.90	17.27	13.91	13.17	15.39	15.23	15.46	11.69	12.49
Lynn:										
U. S.	19.27	14.67	13.63	12.49	19.38	13.24	9.68	14.15	13.03	11.05
State	18.68	14.10	13.35	11.82	18.19	12.85	9.68	14.03	12.79	11.28
Local	18.83	16.38	14.32	12.09	17.92	13.50	9.93	13.90	13.03	11.16
Malden:										
U. S.	17.53	12.74	15.81	14.05	15.07	13.93	14.50	11.09	11.46	9.50
State	15.45	11.58	15.53	12.40	13.72	12.62	13.73	11.09	11.22	9.50
Local	16.64	15.06	14.97	14.33	13.72	14.99	13.73	10.35	11.94	10.20
New Bedford:										
U. S.	16.98	21.75	18.15	18.11	20.98	15.87	16.49	15.37	13.44	12.90
State	16.98	21.44	16.96	17.96	18.90	16.00	16.61	15.85	13.56	13.55
Local	16.18	21.44	17.26	16.81	19.03	16.41	15.73	15.97	14.13	13.44

DEATH-RATES FROM TUBERCULOSIS IN NINETEEN MASSACHUSETTS CITIES—(*Continued*)

CITY	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Newton:										
U. S.	10.42	10.52	9.17	7.04	10.50	8.42	6.41	7.36	7.76	6.63
State	11.31	12.56	8.31	6.47	9.67	8.15	6.68	7.10	8.02	6.63
Local	10.12	12.85	9.75	6.47	9.12	7.60	5.87	6.83	7.25	6.37
Salem:										
U. S.	17.24	15.16	17.20	16.78	15.28	16.48	14.41	14.97	12.05	8.70
State	15.85	15.98	16.38	16.51	14.75	15.41	14.93	15.22	12.05	8.70
Local	10.57	16.53	27.30	22.19	15.02	15.41	21.49	15.22	11.63	9.65
Somerville:										
U. S.	16.87	14.56	17.00	12.38	13.88	10.97	12.84	11.86	9.99	10.04
State	16.71	14.09	16.38	12.08	13.14	11.12	12.70	11.45	9.99	9.91
Local	16.55	14.56	15.92	12.38	13.88	12.13	13.40	11.86	9.61	10.17
Springfield:										
U. S.	15.95	16.63	13.95	14.36	14.18	11.97	11.74	11.54	9.42	10.94
State	16.44	16.47	13.65	14.07	13.05	11.69	12.13	11.16	9.08	10.83
Local	15.63	15.69	13.05	16.53	15.16	12.51	12.26	12.17	8.57	10.60
Taunton:										
U. S.	21.91	21.27	21.28	16.78	19.69	23.90	20.23	16.72	20.94	16.36
State	22.23	19.66	19.67	16.78	18.40	23.25	20.23	16.72	21.55	16.07
Local	21.91	16.12	25.48	18.71	20.34	25.51	21.50	16.10	19.73	15.17
Worcester:										
U. S.	20.60	19.19	16.52	17.06	16.80	17.17	15.48	15.00	15.05	11.86
State	20.77	18.69	15.78	16.58	15.77	16.62	15.33	14.26	14.76	11.86
Local	21.11	19.94	17.01	17.14	16.25	17.79	14.88	13.82	14.76	12.28

DEATH-RATES FROM TUBERCULOSIS IN TEN NEW YORK CITIES. COMPUTED FROM THREE SOURCES OF REPORTING: UNITED STATES BUREAU OF THE CENSUS, STATE BOARD OF HEALTH, AND LOCAL BOARDS OF HEALTH: 1900-1909 INCLUSIVE

CITY	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Albany:										
U. S.	23.37	23.50	19.98	20.97	22.35	21.16	20.75	17.99	20.70	21.15
State	24.53	25.18	22.50	23.66	22.25	21.67	20.65	17.91	21.15	17.04
Local	23.37	25.61	21.44	21.38	22.25	23.92	22.68	21.15	23.36	19.44
Auburn:										
U. S.	15.82	13.32	9.29	18.01	15.27	11.99	16.08	13.18	14.19	10.80
State	17.13	13.96	10.57	18.00	14.64	12.91	15.77	12.28	14.19	9.93
Local	17.46	14.94	10.57	17.37	16.51	11.68	15.77	13.18	13.90	10.80
Binghamton:										
U. S.	14.12	13.14	21.94	14.14	19.34	16.47	17.66	13.92	15.98	12.45
State	16.64	17.35	4.87	14.38	18.62	12.99	12.00	9.72	10.79	7.59
Local	17.15	16.85	19.74	13.18	19.57	15.77	14.79	12.60	15.76	11.39
Buffalo:										
U. S.	11.32	12.68	11.76	12.20	13.57	13.00	12.55	12.38	12.79	12.79
State	12.11	13.32	12.61	12.83	12.39	12.81	12.83	12.53	12.98	12.62
Local	12.00	13.18	12.45	12.83	13.81	12.81	12.83	12.56	13.08	12.62

DEATH-RATES FROM TUBERCULOSIS IN TEN NEW YORK CITIES—(*Continued*)

CITY	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Elmira:										
U. S.	12.90	12.05	14.57	11.20	12.04	13.72	13.32	13.22	9.29	10.30
State	14.29	14.29	15.40	10.64	11.20	14.27	13.05	12.67	9.01	9.21
Local	15.13	14.85	16.25	11.20	13.16	13.15	13.32	12.39	10.11	9.75
New York City:										
U. S.	24.20	22.88	20.78	21.16	22.04	21.11	21.49	20.68	19.77	18.67
State	23.74	22.93	20.72	21.64	21.90	21.31	21.60	20.88	19.87	18.73
Local	23.72	22.91	20.67	21.19	21.59	21.33	21.55	20.89	19.88	18.73
Rochester:										
U. S.	14.39	14.92	11.06	12.56	14.05	14.78	14.29	12.62	13.35	13.65
State	16.17	15.39	11.24	12.96	14.50	15.05	13.26	12.16	12.66	13.36
Local	16.29	15.81	11.88	13.48	15.40	15.98	14.90	14.81	15.31	15.97
Schenectady:										
U. S.	13.89	17.80	12.10	16.34	12.48	12.71	12.26	12.80	10.00	12.30
State	14.51	17.23	12.52	14.96	12.10	13.05	11.77	12.64	9.55	12.30
Local	11.67	16.67	14.22	11.41	13.55	13.22	11.61	12.64	11.19	10.72
Syracuse:										
U. S.	15.78	15.89	11.80	13.11	14.65	12.04	12.05	11.90	11.99	11.18
State	15.87	16.07	11.88	12.49	14.90	12.46	11.30	11.82	11.91	10.88
Local	15.59	16.52	11.17	12.93	14.73	13.31	11.88	11.50	11.84	11.03
Yonkers:										
U. S.	17.32	20.15	16.13	20.35	19.59	17.59	16.43	13.23	16.15	14.18
State	15.80	19.94	16.31	21.06	19.24	17.91	17.05	12.36	16.01	14.05
Local	16.47	18.17	17.44	21.96	18.73	16.25	16.28	12.79	16.56	14.58

DEATHS FROM TUBERCULOSIS IN NINETEEN MASSACHUSETTS CITIES, ARRANGED ACCORDING TO THREE SOURCES OF REPORTING: UNITED STATES BUREAU OF THE CENSUS, STATE BOARD OF HEALTH, AND LOCAL BOARDS OF HEALTH: 1900–1909 INCLUSIVE

CITY	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Boston:										
U. S.	1,400	1,331	1,220	1,193	1,270	1,200	1,199	1,149	1,091	1,044
State	1,358	1,281	1,176	1,155	1,210	1,145	1,134	1,122	1,058	1,039
Local	1,407	1,346	1,247	1,227	1,280	1,224	1,185	1,138	1,094	1,072
Brockton:										
U. S.	76	66	71	53	57	67	49	44	53	46
State	69	68	73	55	55	67	50	40	52	45
Local	78	71	76	64	69	80	55	51	51	45
Cambridge:										
U. S.	228	207	187	166	189	176	168	237	270	281
State	222	205	190	164	185	171	171	235	271	283
Local	207	188	184	166	190	171	156	169	138	160
Chelsea:										
U. S.	64	60	62	74	82	66	63	57	44	38
State	63	59	63	66	74	58	63	57	42	37
Local	68	60	67	68	76	60	68	57	48	43
Fall River:										
U. S.	193	162	183	194	224	156	147	175	150	152
State	192	161	182	195	217	150	147	174	150	149
Local	214	225	215	267	160	133	141	151	142	147

DEATHS FROM TUBERCULOSIS IN NINETEEN MASSACHUSETTS CITIES—(*Continued*)

CITY	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Fitchburg:										
U. S.	31	39	35	40	35	29	41	47	36	23
State	31	37	35	42	35	30	41	45	36	25
Local	32	38	35	39	36	29	40	45	34	24
Haverhill:										
U. S.	68	89	59	62	62	72	56	64	57	53
State	66	89	53	61	61	72	51	65	55	49
Local	66	74	52	55	60	67	55	65	55	54
Holyoke:										
U. S.	91	84	79	74	98	81	69	89	84	86
State	92	84	77	71	85	71	67	87	82	86
Local	88	88	78	69	104	79	59	90	82	79
Lawrence:										
U. S.	117	104	114	105	115	114	109	116	106	131
State	116	108	107	117	111	107	108	109	106	132
Local	114	110	113	118	117	118	107	118	126	154
Lowell:										
U. S.	183	158	156	129	134	146	150	153	124	125
State	181	160	154	124	126	148	143	153	125	126
Local	186	170	164	132	125	146	148	153	119	130
Lynn:										
U. S.	132	103	98	92	146	102	77	116	110	96
State	128	99	96	87	137	99	77	115	108	98
Local	129	115	103	89	135	104	79	114	110	97
Malden:										
U. S.	59	44	56	51	56	53	57	45	48	41
State	52	40	55	45	51	48	54	45	47	41
Local	56	52	53	52	51	57	54	42	50	44
New Bedford:										
U. S.	106	141	122	126	151	118	130	128	118	119
State	106	139	114	125	136	119	131	132	119	125
Local	101	139	116	117	137	122	124	133	124	124
Newton:										
U. S.	35	36	32	25	38	31	24	28	30	26
State	38	43	29	23	35	30	25	27	31	26
Local	34	44	34	23	33	28	22	26	28	25
Salem:										
U. S.	62	55	63	62	57	62	56	60	50	37
State	57	58	60	61	55	58	58	61	50	37
Local	38	60	100	82	56	58	83	61	48	41
Somerville:										
U. S.	104	92	110	82	94	76	91	86	74	76
State	103	89	106	80	89	77	90	83	74	75
Local	102	92	103	82	94	84	95	86	71	77
Springfield:										
U. S.	99	107	93	99	101	88	90	92	77	94
State	102	106	91	97	93	86	93	89	76	93
Local	97	101	87	114	108	92	94	97	71	91
Taunton:										
U. S.	68	66	66	52	61	74	64	54	69	55
State	69	61	61	52	57	72	64	54	71	54
Local	68	50	79	58	63	79	68	52	65	51
Worcester:										
U. S.	244	231	202	212	212	220	204	203	209	169
State	246	225	193	206	199	213	202	193	205	169
Local	250	240	208	213	205	228	196	187	205	175

DEATHS FROM TUBERCULOSIS IN TEN NEW YORK CITIES, ARRANGED ACCORDING TO THREE SOURCES OF REPORTING: UNITED STATES BUREAU OF THE CENSUS, STATE BOARD OF HEALTH, AND LOCAL BOARDS OF HEALTH: 1900–1909 INCLUSIVE

City	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
Albany:										
U. S.	220	223	191	202	217	207	204	178	207	168
State	231	239	215	228	216	212	203	177	210	170
Local	220	243	207	221	216	234	223	209	232	194
Auburn:										
U. S.	48	41	29	57	49	39	53	44	48	37
State	52	43	33	57	47	42	52	41	48	34
Local	53	46	33	55	53	38	52	44	47	37
Binghamton:										
U. S.	56	53	90	59	82	71	78	63	74	59
State	66	70	20	60	79	56	53	44	50	36
Local	68	68	81	55	83	68	66	57	73	54
Buffalo:										
U. S.	399	453	426	448	505	490	485	490	518	530
State	427	476	457	471	461	483	496	496	526	523
Local	423	471	451	471	514	483	496	497	530	523
Elmira:										
U. S.	46	43	52	40	43	49	48	48	34	38
State	51	51	55	38	40	51	47	46	33	34
Local	54	53	58	40	47	47	48	45	37	36
New York City:										
U. S.	8,316	8,121	7,610	7,990	8,570	8,445	8,927	8,909	8,819	8,616
State	8,162	8,141	7,589	7,990	8,516	8,528	8,976	8,996	8,867	8,645
Local	8,154	8,135	7,571	8,001	8,495	8,535	8,955	8,999	8,869	8,643
Rochester:										
U. S.	234	248	188	218	249	269	270	248	272	288
State	263	256	191	225	257	274	251	239	258	282
Local	265	263	202	234	273	291	282	291	312	337
Schenectady:										
U. S.	44	63	57	83	68	74	75	82	67	86
State	46	61	59	76	66	76	72	81	64	86
Local	37	59	67	58	74	77	71	81	75	75
Syracuse:										
U. S.	171	175	132	149	169	141	146	149	155	149
State	172	177	133	142	172	146	138	148	154	145
Local	169	182	125	147	170	156	144	144	153	147
Yonkers:										
U. S.	83	102	86	114	115	108	107	91	117	108
State	71	101	87	118	113	110	103	85	116	107
Local	79	92	93	123	110	106	113	88	120	111

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THE CONGRESS ON SCHOOL HYGIENE

The Fourth International Congress on School Hygiene is to be held at Buffalo, August 25–30, 1913. The bulletin announcing the objects and organization of this Congress indicates that it is being planned for the purpose (1) of bringing together men and women interested in the health of school children; (2) of organizing a program of papers and discussions covering the field of school hygiene; (3) of assembling a scientific exhibit representing the best that is being done in school hygiene; (4) of securing a commercial exhibit of practical and educational value to school people; and (5) of publishing the proceedings of the Congress and distributing them to each member. The Congress is under the honorary patronage of the President of the United States and under the presidency of Mr. Charles W. Eliot, one-time President of Harvard University. The list of organizing committees contains committees in thirty-four foreign countries and in forty-five states in this country. The

program at the present time is made up of two hundred and thirty papers in addition to ten or a dozen symposiums which are being formed by as many national societies interested in various special phases of school hygiene.

The diverse geographical source of the various officers and committees listed in this bulletin indicate a pretty general realization of the universal need for improved sanitary and hygienic influences in our city, village and rural schools. The program indicates a definite desire on the part of the promoters of this Congress to focus attention upon the application of hygienic knowledge, hygienic methods and hygienic procedures to school conditions through school people and through public-spirited citizens, so that our scientific knowledge of school hygiene may be put to work for the benefit of mankind. This journal desires to express a cordial sympathy with these plans and to state the hope that this Congress may lead to a persistent, permanent and serious activity in the interest of better school conditions in all communities.

COLORADO SPRINGS MEETINGS, SEPTEMBER 9–13.

The 1913 meetings of the American Public Health Association are rapidly drawing near and good progress is being made in the preparation of the programs for the meetings of the general Association and of the five sections.

It has been demonstrated in the past that the section meetings are usually of more direct value to the members of the Association than those of the general sessions, and with this in view, most of the sections are planning to have an extra session. Members desiring to contribute to the programs of either the general Association or the sections should communicate immediately with the officers who are arranging the programs. For the convenience of members the following list of persons is given who are actively engaged in the preparation of the programs:

General Association, Professor Selskar M. Gunn, 755 Boylston Street, Boston, Mass.

Laboratory Section, Professor Edward Bartow, University of Illinois, Urbana, Ill.

Section on Vital Statistics, Doctor W. S. Rankin, State Board of Health, Raleigh, N. C.

Municipal Health Officers' Section, Doctor John H. Landis, Health Officer, Cincinnati, Ohio.

Sanitary Engineering Section, Mr. R. S. Weston, 14 Beacon Street, Boston, Mass.

Sociological Section, Mr. Homer Folks, 105 East 22d Street, New York City.

Suggestions would also be welcomed of subjects which should be taken up at the meetings. It is hoped that every member of the Association is planning to be in attendance.

Now is the time to induce suitable persons to join the Association and the Secretary will be very glad to send application blanks and circulars of information to any member who can assist. Co-operation on the part of the membership of the Association is earnestly urged.

TWO WAYS BY WHICH VITAL STATISTICS CAN BE MADE MORE USEFUL TO THE HEALTH OFFICE.

G. W. Atherholt,
Chief, Division Vital Statistics, Bureau of Health, Philadelphia.

Read before the Joint Session of Sections of Municipal Health Officers and Vital Statistics, American Public Health Association, Washington, D. C., September, 1912.

The part that vital statistics play in the prosecution of the health officer's work in controlling epidemics, and furnishing the basis for instituting preventive measures, for the preservation of public health, is an important one and by many is considered to be the most important since the data so furnished is considered to be more definite and fixed than that produced by morbidity statistics.

But let us be fair with ourselves. Are our vital statistics correct or accurate, and if not, how can they be made so? This is a much discussed question and one that deserves the fullest consideration of all interested in public health work.

One of the chief difficulties we find is lack of definiteness of some physicians and apparent carelessness and indifference of others in stating causes of death, a condition which is not peculiar to Philadelphia. Many specific instances of this feature of vital statistics work have been collected, and commented on in the various publications of the United States Census Bureau, and the rules created by that Bureau have been of great service to the vital statistician. These rules, however, chiefly refer to cases where two or more diseases are jointly reported, and for this reason need not be further discussed.

We have for a long time held the view that the greatest trouble, and the one which occasions the greatest discrepancy in our disease tabulation, is caused by the careless, indifferent or ignorant doctor, who simply gives terminal conditions as the cause of death. As an instance of this, in the decade from 1871 to 1880, in Philadelphia, the deaths reported as caused by heart diseases, represented 4 per cent. of the total deaths, and, in the decade from 1901 to 1910, they represented 9 per cent. an increase of more than 100 per cent. The actual increase is even greater than this, for the reason, that in the first period, physicians were only required to give a cause of death. No contributory cause was asked for, and burials were made on death certificates, which were sent to the health department, in bulk, from the cemeteries at the end of each week. Lack of inspection before permission to bury was given placed no check whatever on the physician in stating causes of death. When we consider that today, we not only ask for the chief and contributing causes of death, but the duration of each, and require that the certificate must pass competent scrutiny be-

fore a permit for burial is issued, we can well imagine what this increase means, and what is true of heart diseases may also be true of several other diseases.

What is the reason for this condition? In conversation with scores of physicians upon this subject we are firmly convinced that lack of knowledge of the uses to which vital statistics are put is the principal cause, and this can in a large measure be overcome by each medical college, incorporating in its curriculum a short course of study on the uses of vital statistics, and the importance of correct statements of causes of death. An easy way to accomplish this is to have State Boards of Medical Licensure include, in their examinations, questions bearing on the subject. However, any method by which it can be brought about is worthy of the best effort of the American Public Health Association.

In the prosecution of work in child hygiene for the prevention of infant mortality, the first feature to be considered is the prompt and accurate reporting of births. In fact, it is the foundation upon which all such work must rest.

For six years, backed by what has been considered a model state registration law, we have endeavored to perfect birth registration in Philadelphia, and in that period, the rate per 1,000 of population has increased from 23.39 to 25.37, and yet with 40,666 births reported for 1911, we estimate that we are receiving only about 90 per cent. of the births which actually occur.

We have proceeded on the theory that the delinquent doctor or midwife should be prosecuted as the law prescribes, and while prosecutions at first produced substantial results, we could by this means reach only a limited number. We have since the beginning of this year tried the method of notifying the physicians by postal card whenever a birth was received after the ten days prescribed by law for reporting and asking for an explanation of the delay. This has enabled us to reach a much larger number, thereby securing greater coöperation and better results than by the other method. However, the hundreds of replies received furnish interesting reading, and while many of the excuses are frivolous, quite a large number have been serious and have caused us to consider whether we are not proceeding wrongly in placing the entire responsibility on the doctor or midwife. The clerical work imposed on them by the present law is considerable and the liability to error in making out a large number of reports is great. Moreover, we find conscientious doctors and midwives do not care to send in incomplete reports, and as most children are not named within ten days, we question very much whether they should be required to do so, for many of these incomplete reports are for one reason or another never completed.

If, however, the law could be strictly enforced it would not bring these reports in in time to be of efficient service to the health officer.

The following plan is therefore submitted as overcoming some of the difficulties. It will require changes in existing registration laws, and may not be adaptable to all localities, but for large centers of population where the bulk of the baby-saving work is being performed, would no doubt work well.

Supply your physicians and midwives with printed postal cards, requiring them to simply state thereon that on a certain date he or she delivered Mrs. ——— residing at ——— Street, of a living or dead born child. Require that the card shall reach the department within twenty-four hours after birth. This will put the health officer in immediate touch with every new born babe. Let the doctors and midwives know that their responsibility ends with the mailing of the card and you will at once get their hearty coöperation.

Index the cards so received and immediately mail to the parents of the child, a birth blank to be filled out, a stamped envelope for return of same and enclose with these a circular explaining the law and its penalties and the importance to them and the child of correct and prompt registration. These instructions to be printed in as many different languages as circumstances require. Give them 15, 20 or even 30 days in which to return the completed report. At the expiration of the given time, have an agent of the department call on the parents of all who have not reported and bring the report in.

This will gradually educate the parents themselves to the necessity for registration. More than this, and it is by far the most important feature, it will fix the responsibility for correct data in birth certificates where it properly belongs (on the parents of the child).

Time after time, we are told, by parents who apply for copies of birth certificates to be used to obtain employment under factory inspection laws, or to have children admitted to school, that the doctor or midwife erred in making out the report. The name or names of the parent or parents are wrong. The date of birth is wrong, the name and sometimes the sex of the child is wrong, and in hundreds of cases no first name is given, and the parents are prepared to swear that it was told to the doctor or midwife at time of birth.

The only cases which this plan seemingly will not reach are those in which no physician or registered midwife was in attendance, and these we do not now reach. However, any plan that will awaken the interest of the parents in registration will ultimately reach even these.

This plan will also be found much cheaper than that of paying a fee for reports, and based upon 40,000 births in Philadelphia, can be carried out at an estimated expense of about ten cents per birth, five cents of this being for postage, which could be saved by having Congress extend the franking privilege to cover all correspondence connected with the reporting of vital statistics.

THE PRACTICAL VALUE OF VITAL STATISTICS IN THE SOUTH.

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State Registrar of North Carolina.

Read before the Section on Vital Statistics, American Public Health Association, Washington, D.C., September, 1912.

One can hardly have any adequate conception of the value of vital statistics who has not had personal experience in their application. I have found vital statistics worth more than all other considerations combined in moving thoughtful, practical men to intelligent and effective interest in the public health of their localities.

As examples of the value of vital statistics to me in our campaign I wish to cite several concrete cases:

One has only a short experience as a health officer before he finds out that in going to any town, city, or county to inaugurate sanitary reform he encounters, as the principle obstacle in his way, the unanimous and fixed opinion of many influential citizens of the place that their particular town or community is remarkably healthy. Their own opinion, they are inclined to value above the opinion of a stranger; for, although the stranger may be an expert in sanitary matters, they realize that they base their opinion upon long observation and an intimate knowledge of local conditions. It is not easy to get out of the mind of the business interests of a town or city the presumption that they are healthy, and that their opinion is only presumption, and that, as a matter of fact, they are not competent to hold an opinion as to actual health conditions in their municipality. Last winter I had the honor and privilege of addressing the Carolina Municipal Association. This organization is composed of the municipal officials of the State of North Carolina, including the mayors and aldermen, city clerks and other officials of the towns and cities in our state.

The night before I was to speak to the aforesaid organization, realizing that practically every man would set aside what I had to say about municipal health, feeling sure that I was not referring to his own healthy (?) town, I did the following experiment in order to open their minds to unprejudiced consideration of their most vital problem: Selecting five of the best known and most intelligent citizens of Raleigh, they were called over the 'phone and asked two questions: The first was, "What is your idea of the condition of our city's health?" Without a moment's hesitation, they all replied that it was good. The second question was, "How many deaths do you suppose occurred in the City of Raleigh last year?" Before an-

swering this question there was evident hesitation, resulting from a feeling that they should have been able to answer, at least to their own satisfaction, the second question before answering the first, then the answers came as follows: From a college president, sixty; a well-known banker, sixty; a leading merchant, sixty; a state official one hundred; and a practicing physician, three hundred. All these gentlemen were asked these questions independently and knew nothing of the answers given by the others. The banker, college president, and the merchant evidently guessed five deaths a month, and multiplied that figure by twelve. As a matter of fact, there were five hundred and eighteen deaths in the City of Raleigh last year, but sixty-two less than the sum of the guesses. These five intelligent and public-spirited citizens represent the attitude of the average citizen in matters touching the question of municipal health; they all have opinions resting on mere presumption, unsupported by facts.

The next day I had an attentive and, from their numerous expressions, an appreciative audience, and I opened their hearts to what I had to say with the facts of vital statistics.

Another example: in the summer of 1910, I was invited by a board of county commissioners and board of aldermen to visit their county town and inspect a small collection of water on the outskirts of the town that was supposed to be responsible for a large amount of their sickness. After looking over the pond in the morning and making a general sanitary survey of the town, I walked over to the local registrar's office to see how many people were dying and what they were dying from. At five o'clock I consulted with the board of aldermen, several physicians, and health officers and others. I called their attention to the fact that the small collection of water was but one very small item for consideration in their health situation; that malaria had caused very few deaths in their town, and it was doubtful if the pond had much to do with their malaria as there were so many other breeding places for mosquitoes; that with a little ditching and kerosene oil (I went into details), the pond could be dismissed as a health menace; that whereas the pond was of little consequence, other conditions of health in their city were of grave consequence; that, taking statistics from their own official, they had a death rate of 27.5 per thousand which meant 12.5 people out of every thousand of their population died in excess of the average death rate that obtained throughout the United States; that for four thousand population this meant an annual unnecessary loss of fifty lives to their town; that even if they had a death rate of fifteen some of the fifteen would be from preventable diseases and, therefore, the fifty lives lost must necessarily be regarded as *excessive* preventable deaths; that their records showed a death rate from tuberculosis of three hundred and seventeen per one hundred thousand instead of the average of one hundred sixty-seven; that their records showed a death rate from typhoid of seven

and one half times the average; that during the last winter their town had had its share of deaths from measles for sixty years; that this last fact meant one of two things: either an extremely malignant epidemic or more probably inefficient quarantine; that they were most inconsistent in having required a railroad that passed through the town to build an overhead bridge at a cost of $18,000 because during ten years the railroad had killed, at a crossing, as many as ten people; that the interest on the original investment of the railroad, and the wear and tear of the bridge, would amount to at least $1,500 per year, which they were forcing the railroad to spend to prevent one needless death; that while they were requiring the railroad to spend this amount to prevent *one* death, they, the aldermen, were spending only $150 to prevent *fifty* deaths.

Since that visit, and, I believe largely as a result of that visit, that town and county has taken an unusual interest in public health work. Among other things I may mention that they had, for some time, their town clerk distribute one thousand of our monthly *Bulletins* each month in the homes of their citizens, and now the county health officer has added about eighteen hundred names of the more intelligent and influential citizens of the county to the *Bulletin* mailing list. I regard that town and county at present as being one of the most promising localities in our state for sanitary progress.

Another concrete example of the value of vital statistics: I was invited some time ago to visit one of the principal cities of North Carolina to discuss, at a mass meeting of citizens, their health conditions. While driving over the town, preliminary to the meeting, I met one of their most influential men who inquired of me why I should come to his town to discuss health conditions when their municipal health was remarkably good. I asked him how much he knew about the health of the town. He replied that he had spent most of his life there, and that he was thoroughly familiar with the city, and he supposed he knew a great deal more about it than I did. With a significant smile he asked me what I knew about the health of———. I told him that it would not take more than two minutes to prove to him that I knew a great deal more about the health of——— than he did. To start with, I asked him if he knew how many people per thousand died each year in the United States. He did not. The smile began to disappear. I told him the average annual death rate was fifteen per thousand. Then I asked if he knew the death rate per thousand of———. The smile was gone. He did not. I informed him that it was 29.5 and that it was the largest death rate in North Carolina, and that, moreover, the figures that I was giving him he could get for himself from his town clerk; that they were *his own* figures. I further gave him the death rates from most of the preventable diseases for his town and told him the average death rates for those diseases throughout the United States. I impressed him with the

fact that the excessive preventable death rate of 14.5 per thousand for his city's population of six thousand meant a needless sacrifice each year of 100 lives. I also pointed out to that gentleman that the colored population of that town had a death rate of fifty-two and two tenths, which would be a disgrace in the Philippines much less in a civilized community. My self-satisfied friend soon became an attentive listener and today he knows that his town must at an early date pay proper attention to its public health. That night I gave my audience the same facts, and am satisfied that within a short time vital statistics will replace self-satisfied presumption about health conditions and bring about sanitary reform in that town that so much needs it.

Another concrete example of the value of facts *versus* presumption: A town of forty-two hundred has inaugurated a campaign for meat and milk inspection. The cause of the campaign and the thing that will give that town pure meat and milk is the following tabulation published in the daily paper of the town.

Let us see how this looks tabulated.

Deaths per one thousand inhabitants.

United States	15
Tarboro	26

Per cent. children under five years to total deaths.

United States	26.8
Tarboro	51 plus

Deaths from diarrhea and enteritis per one thousand inhabitants.

United States	1.7
Tarboro	4.19 plus

I could continue to cite examples of the force of vital statistics when applied to the practical brains of a community. There are many people who will become enthused over generalities, but the practical, cool heads that we usually find dictating municipal policies are men who want facts, and the only way to reach this necessary influence in bringing about sanitary reforms is through vital statistics. Vital statistics are the right arm of the health officer, and, in my opinion, the greatest defect in our Southern States in promoting sanitary progress is the absence of vital statistics. As some one has said, "They are the chart and compass of the sanitarian" and he who attempts sanitary campaigns and neglects vital statistics will sooner or later find himself lost in a sea of generalities.

IDENTIFICATION RECORDS FOR UNKNOWN DEAD.

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Read before the Section on Vital Statistics, American Public Health Association, Washington, D. C. September, 1912.

In Tennessee, when I was a boy, I recall with what a community of interest the populace gathered around to view the carcass of a hog, when it became known that a strange "hawg" had been found lying dead by the railroad track. Each man came to compare distinguishing marks of the dead hog with those of his swine. Aside from the characteristics of his particular breed, Farmer Jones "marked" his with a "crop off the right and an underbit in the left." Neighbor Sander's mark was that of an "overbit and underbit in the right and a slit in the left." Thorough investigation was made to determine in what manner the hog met death and to whom it belonged. By the natural and the acquired characteristics, the great majority of the animals were recognized, three disinterested parties appraised them, and proper adjustments were made. If, however, the rightful owner failed to appear, the foreman made accurate notations of the peculiar marks and conditions and the railroad company was furnished with a record. That hog had a valuation in dollars and cents. Someone might claim damages later, offering definite descriptions in justification of his contentions.

In the United States, and I believe this applies to other countries, if a *man* is so unfortunate as to meet accidental death, foul play or other sudden death among strangers, though he may have many characteristics by which relatives or friends might identify him, no central body ever knows of them. A coroner's jury, frequently of little, if any, scientific value, evolves a verdict of death from "a sudden attack of heart failure," or "unknown" cause and of an unknown person. The dead body is kept a day or so, awaiting some one to claim it, when the county, with reluctance, makes a frugal expenditure for a pine box which is carted out to the potter's field. A career is ended. The State Board of Health gets this description of the deceased, if it gets any: Name, unknown; sex, male or female; color, and apparent age. You know the dead one belongs to the genus homo, that he is white or black, red, yellow or brown, was young, middle-aged or old. Here the personal description stops; 50,000,000 people in the United States answer this description. Nobody delves into the dead one's past, nor sings his requiem. The last remains are put away under the blazing sun of the tropics, beneath the snow laden pines of the North,—

somewhere in an uncared-for spot in God's Acre, where no loved one drops a tear or tender hands may place sententious flowers.

Upon assuming the duties of registrar of vital statistics of the State Board of Health of Illinois, the writer was impressed with the large number of unknown or unidentified dead reported to the board, and by the dearth of information supplied by the death certificate which is prescribed. True, a few states have statutory requirements for identification remarks by coroners, but the actual records are meagre, filed with doubtful availability in the various counties, with no central bureau or office having a description.

The inquiry may be made, "Why is this a matter of concern to a health organization?" As a matter of primary importance, it is not perhaps, under normal conditions, neither is the registration of other vital statistics. But suppose that in some of our coast cities today,—New Orleans for instance,—the dead body of a stranger is found in a rooming house where sailors or immigrants are accustomed to stop, the local health officials as well as the coroner will first be interested in what caused the death; the next questions for solution are from whence came, and who is the deceased. Autopsy may disclose conditions pathognomonic of bubonic plague. No papers, cards, or other personal effects are suggestive of the identity, or from whither he had journeyed. Next in importance to the cause of death, is the identity of the deceased, both from a sanitary and from a legal standpoint. Two sources of information are required in order to arrive at a proper diagnosis of a disease—the subjective and the objective. The latter is obtainable in the unknown dead as readily as in the known dead. The subjective, partly through distinguishing marks, may be supplied, and it may not be improbable to locate foci of infection by establishing identity.

I devised the special certificate which, with the approval of Dr. J. A. Egan, superintendent of vital statistics in Illinois, has been put into force in the state, since April, 1912. This certificate is the same as the other form of coroner's certificate, with the exceptions that it is of a contrast color, rendering it readily noticeable, and on the back of the certificate there are two models or diagrams of the human body, one showing the front, and the other the back view. A very much abbreviated Bertillon system—one requiring, of necessity, little skill in its application,—has been inaugurated. Above the diagrams are blanks for the height expressed in feet and inches, the approximate life weight; two rows of figures, upper and lower, ranging from 1 to 8 inclusive, representing the teeth in each jaw, and the coroner is instructed to cross out or indicate the teeth missing or artificial. Below the models are the following instructions to the coroner:

Marks of Identification:

Indicate on diagram No. 1, beginning at the head and face and continuing to the arms, forearms, chest, abdomen and lower extremities, the exact location of scars, moles, warts,

tatooes or other marks, stiff joints, missing or deformed fingers, toes, or other distinguishing marks or conditions. Draw a line extending from the location of the marks of identification outward to the side of the diagram and describe the marks as "R. S." (round scar), "L. R. S." (large round scar), "S. R. S." (small round scar), "L. S." (long scar), "I. S." (irregular scar), "R. M." (round mole), "B. M." (brown mole), "Vac. S." (vaccination scar), etc. Also give color of hair, and, if adult male, indicate presence of mustache or beard.

Use the same method for the posterior surface of the body; indicating marks from diagram 2. Indicate missing teeth by crossing out the proper figures above No. 1 diagram. Gold teeth or false teeth also may be indicated in this way, but a note should be made explaining whether false teeth, gold teeth, etc. Also fill in blanks above diagram 2 for height and weight.

The instructions and records might be extended to include a complete anthropomelogical survey, according to the Bertillon system of identification and classification, dactyloscopy and photography, but any method to be used by the coroners, must be made as simple and yet practical as possible. The office of coroner, as I am led to believe is the case generally, is too often held by the incompetent, who selects the office from a "vacational" as well as from a "vocational" consideration.

In putting into use the special certificate, and desiring the full coöperation on the part of the coroner, I addressed a communication to each coroner in the state, asking his opinion of a plan to photograph each unknown dead body, giving a copy to at least one local paper and sending one to the Bureau of Vital Statistics, together with the special certificate. The coroners, with few exceptions, approved the idea, but many stated their respective counties would not stand for the expense. In fact, one gave us the startling statement that his county had refused to pay 50¢ for a telegram to members of a family to which the unfortunate deceased was supposed to belong. So, additional to the special corner's certificate and record, coroners are merely requested to supply a photograph when they can do so without expense to themselves. Up to this time, several have forwarded photographs. To render the fullest service, complete descriptive lists, together with cuts, should be published and given wide distribution.

A few words as to the recording of the certificate upon receipt by the State Board of Health. Exact copies are made on similar blanks, and kept on permanent file, arranged serially according to the date of receipt. I have, in addition, designed a signaletic card for filing, in order that a ready reference may be had. On the following page is shown a specimen card.

These cards are then filed in the order of their most pronounced distinguishing features. The original certificate is treated as the certificates in general, finally being returned to the office of the clerk of the county in which the death occurred, for permanent file.

As to the feasibility of identifying the unknown dead by this method, I would state that relating to the criminal class, there is scarcely one of the larger cities in the world but that employs the Bertillon system of identification, either alone or with other methods, as finger and thumb printing

and photography. The United States Army and Navy, and the Department of Interior have similar records, and many institutions, as certain banks, and hospitals for the insane, correctional institutions and the like, also keep records, through which identification may be effected, so that

Certificate No. ..... Supposed to be ..... Date of death .....

Sex ..... Color ..... Age ..... yrs. Height ..... in. Weight ..... lbs.

Front.	Rear.
Head	Head .....
Face	Face .....
Chest	Chest .....
Abdomen	Abdomen .....
.....	
Upper Extrm. Right	
.....	
Upper Extrm. Left	
.....	
Lower Extrm. Right	
.....	
Lower Extrm. Left	
.....	
Teeth Upper Right	
Teeth Upper Left	
Teeth Lower Right	
Teeth Lower Left	

Clothing, Personal effects, Remarks .....

.....

Cause of Death—No. ..... County .....

were a more complete record of identification made of the dead, including accurate anatomical descriptions, and finger printing, duplicates might

be found of those previously recorded in these various departments. For the majority of the unfortunate "unknown," however, under present conditions, the more gross and commonly known characteristics will have to suffice. I believe the time may come, however, when finger printing, known absolutely and unequivocally to identify an individual, from the seventh month of intra-uterine life till after death, will be made a part of each certificate of birth, and will be required of patrons of steamship and railroad lines, in insurance examinations to prevent fraud, to purify the ballot box by eliminating repetition in voting, and extended to various commercial transactions.

Heretofore, we have looked upon systems of identification as concerned almost entirely with the detection of crime. Now, as sanitarians the world over are receding, from the fomites principle of the spread of disease, and are attaching greater significance to man himself, we will lend more energy toward following the movements of the individual. And as the state owes it both to the living and to the dead that proper and accurate records be kept concerning deaths, it is but an extension of the obligation that each decedent be identified and a personal characteristic record kept.

It seems to me also, that it is not without the proper province of our United States Public Health Service or the Immigration Bureau to furnish state health officials with more detailed information of immigrants. Especially might this be commendable in times when thousands of immigrants from plague or pestilence infected countries are scattering throughout the various states. Finger imprints and anthropomelogical records of immigrants would strengthen what is already the greatest barrier against imported pestilence ever known,—the present United States Public Health Service.

Life insurance companies could, to a certain extent, protect themselves against possible fraud by finger printing each would-be-policyholder, as a part of the medical examination. Probably more than eighty per cent. of the insurable male population today carry some form of life insurance, and it is the male that constitutes almost all of the unidentified dead. Should each medical examination embrace the simple procedure of finger printing, a standing record of identification of incontrovertible accuracy is made, and should the coroner's record be extended to include finger printing, it would go far in making known the identity of the 2,500 estimated unknown in the United States that are annually laid beneath the sod, with no marks of respect and no record of identity.

THE STATEMENT OF DURATION OF DISEASE ON DEATH CERTIFICATES AS A DETERMINING FACTOR IN CLASSIFYING CAUSES OF DEATH.

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Read before the Section on Vital Statistics, American Public Health Association, Washington, D. C., September, 1912.

In discussing statements of duration of disease on death certificates in their relation to the statistical disposition of deaths, I wish to state that I realize that this is only one of the several standpoints from which the subject of duration of disease offers a field for comment. It is easy, for example, to imagine cases where it might be of great value in adjusting insurance claims, in showing the presence of mental, nervous or other diseases, at the time of making wills, contracts, or participating in other legal transactions; indeed, one might hypothecate a case in which it might be used in proving the date of birth of a child in one of the too numerous instances where births fail of registration: a mother might die of the effects of a Caesarean section, ten days, let us say, after the operation was performed—if no other record could be produced in later years, the accurate statement of duration in such a case might prove just the evidence needed of the date of birth.

Passing these matters, however, and looking at the question from the viewpoint of one whose vocation involves the "editing" of statements of cause of death, as they come to the Vital Statistics Division of the Bureau of the Census on transcripts received from various state and municipal boards of health, I wish to lay particular stress upon the importance, if not the *necessity*, of accurate statements of duration as essential factors in the determination of the correct headings or titles of the International List of Causes of Death to which certain cases should be assigned. Expressions of opinion from you gentlemen as to how far we should go in considering the statement of duration to be a component part of the statement of disease or cause of death will be both interesting and helpful.

Now in this connection, your attention is directed to the fact that the assignments of deaths from certain diseases, returns of many thousands of which we receive every year, are—according to the International List—governed by the qualifications *acute* and *chronic*. Let me cite some

of the most important: *Acute* bronchitis is assigned to title No. 89 and *chronic* bronchitis to title No. 90; *acute* rheumatism is classified under title No. 47, the heading of which is "Acute articular rheumatism," while *chronic* rheumatism is compiled under title No. 48, "Chronic rheumatism and gout"; *acute* endocarditis is the title-heading of title No. 78, but *chronic* endocarditis appears as one of the terms included under title No. 79 (organic diseases of the heart); *acute* hepatitis is assignable to congenital debility (title 151) or to the residual heading denoted "Other diseases of the liver" (title No. 115) according to the age of the decedent, but a return of *chronic* hepatitis is counted as a death from "Cirrhosis of the liver" (title No. 113); *acute* nephritis goes under title 119 and *chronic* nephritis under 120. Many others might be cited, but these are the ones of greatest numerical importance.

I am well aware, as noted in the Introductory to the Manual of the International List of Causes of Death, that, according to leading authorities, "the terms *acute, subacute* and *chronic* have lost their pathological and much of their clinical meaning, and may even be actually misleading;" but the fact remains that the International Classification still recognizes these terms as the bases for making distinctions in the classification of many of our most common diseases, and as this same classification is the vital statistics gospel, we must deal with these reports accordingly—at least, until the advent of another revised version. The application of the statement of duration here is easily appreciated, but two questions immediately suggest themselves—(1st) Shall the statement of duration be regarded as a component part of the statement of cause of death?—and (2d) if so, what period or limit of duration shall be construed as marking the dividing line between acute and chronic conditions? *A* dies of hepatitis having been ill therewith for eleven months and twenty-nine days; *B* dies of hepatitis after a siege of a full year; now did *A* succumb to acute hepatitis and *B* to cirrhosis of the liver (under which heading chronic hepatitis is classified); did both die of acute hepatitis or did both die of cirrhosis of the liver? I realize that there is likely to be much difference of opinion as to the proper dividing line, but the International List is full of arbitrary distinctions with respect to the classification of many diseases on the bases of *age* and *sex*, and the difference of one day in the *ages* of two decedents who died of what (according to the reported cause) one *might* presume to be the same disease, often compels us to compile their deaths under different headings. The International classification makes no provision about the item of duration, either with respect to the regulation of preference when causes are jointly returned or with reference to this question as to whether or not the duration is a part of the statement of cause of death; in fact, the item does not appear on many European forms. We are in no danger, therefore, of violating either the spirit or

the letter of the law as far as the International List is concerned for the simple reason that on this question there appears to be neither letter nor spirit to violate.

Now the Standard Certificate provides for the statement of duration. In some cases the space is used and the information given on the transcripts received by the Bureau of the Census and in others it is not in evidence. In some cases it is apparently reliable and in others it is undeniably unreliable, as I hope to demonstrate. Let us put the question of the use of this item in our work of "editing," then, in this form: In cases where the statement of duration is apparently reliable shall we consider it a component part of the statement of cause of death, and if so, when the classification of terms is governed by the qualifications *acute* and *chronic*, what term of duration shall be the dividing line?

In general, I believe that statements of *long* duration are reliable while those of short duration are unreliable. If a physician writes *two* years in the duration space following a report of bronchitis, or hepatitis, or nephritis, we can safely assume that this approximates, in the physician's knowledge or opinion, the period of time covered by the illness of the decedent. On the other hand, it can *not* be taken for granted, if he writes *ten days* that *this* represents the real duration of the disease and that it was therefore acute, for it has been conclusively demonstrated that these statements of short duration frequently cover only the terminal sickness or the period covered by the signing physician's attendance. Many certificates are encountered every year, on which diseases that are essentially chronic are described as having durations of *days*, and very frequently we handle transcripts on which the disease is *qualified* by the word *chronic* and yet the stated duration is one of *days*.

If we absolutely disregard the item of duration of illness, we shall classify many deaths whose assignments to certain titles are plainly indicated thereby under headings to which they do not belong, and if the length of duration that could be construed as definitely defining (for purposes of classification) the chronic character of certain diseases can be agreed upon, it seems to me that, in the final analysis, we shall get more satisfactory results than by disregarding an item for which our "Standard certificate" calls. Doubtless the physician, in most cases, does not consider it necessary to qualify a statement by the word *chronic* when he writes *two* or *three* or *ten* years in the duration space.

There are times, indeed, when to disregard this item in editing causes of death would mean classifying returns in such a way as to be absolutely untenable. Suppose the report is *Scarlet fever-Nephritis*, the former being given as the "contributory" cause, the age—let us say, twelve years. Now with *no* statement as to duration, or one of short duration, the natural inference is that the renal lesion was *acute* nephritis, which is about the

most frequent fatal complication of scarlet fever. In many cases, however, this scarlatinal nephritis becomes chronic. Now, is it not quite evident, if there is a stated duration of three or five years for each of these diseases, that the "nephritis" was chronic dating from the attack of scarlet fever three or five years before; that there *was* no scarlet fever present at the time of death, nor had there been for years before; and that it would be a grave error to charge this or any other death to an *acute* infectious disease, cured, and *not* present, which, in fact, resulted from a *chronic* condition which happened to date from that acute infectious disease and was undoubtedly the one under which the death should be classified? If the physician had written the whole history of such a case, no one would think of assigning the death to the scarlet fever; but the space provided on certificates for the description of causes of death is not sufficient for detailed case histories, and in such instances, physicians are justified in taking it for granted that correct particulars as to duration are sufficient to show the true nature of the condition that caused death. Why, then, does he write *scarlet fever* at all if it was not an active cause of death? One does not have to handle death certificates long in vital statistics work to learn that many physicians do not have in mind when writing them the disposition that is to be made of them statistically. The certificate *calls* for a contributory cause and does not specify whether it was recent or remote. Knowing that the nephritis dated from the attack of scarlet fever, he fills out the certificate to that effect, giving the latter as the contributory cause and also filling in the duration. A note under acute articular rheumatism (Title 47, Manual of the International List of Causes of Death), warns us that this title does not include chronic organic diseases of rheumatic origin, but only the correct statement of duration, at times, will serve as a competent guide by the aid of which we can determine whether certain diseases jointly reported with rheumatism were simply intercurrent affections not dependent thereon or whether they were of rheumatic origin. Thus it is seen that in dealing with joint causes, we must, perforce, take this item into consideration, as it often shows the primary cause to be one not otherwise indicated. Some years ago a transcript was received on which some disease was reported in conjunction with "gunshot wound." The transcript was returned to the source from which it came with a request for more definite information in order that we might be able to classify the death as a suicide, homicide or accident. On the return of the transcript it developed that the gunshot was received during the Civil War. Had a duration of forty or forty-five years appeared on the transcript, it is needless to state that we would not have considered including this case among those to be tabulated as due to violence.

Some years ago the Bureau of the Census published a pamphlet entitled "Modes of Statement of Cause of Death and Duration of Illness on Death Certificates." In this pamphlet the importance of accurate statement of duration of illness in its relation to the compilation of mortality data is very thoroughly set forth and most phases of the subject fully discussed. It does not, however, say definitely whether or not the statement of duration should be considered a *part* of the statement of cause of death. As one confronted daily with this problem, I quote one sentence, which, I think should interest all registration officials. It is "Many registrars decide as to the "acute" or "chronic" character of certain diseases by the duration stated, or, in the absence of a statement of duration, by the period of medical attendance." On the transcripts received from many states and cities by the Bureau of the Census the title number of the International List showing how the state or municipal office classified each death appears, and these numbers show that the statements of duration are frequently the bases of assignments. I am quite sure that expressions of the views of these "Many registrars" with regard to the location of this statistical deadline would be both interesting and instructive. It seems to me that there should be agreement on this matter; there is no good reason why practice should be unsettled. Many thousands of assignments are affected—enough, undoubtedly, to change a number of death rates. It is true that general European practice lays little stress upon the element of duration, and many European certificates do not contain this item. It is part of our own "Standard certificate," however, and it seems to me that we should make the most of it.

SOME NEWER PROBLEMS AND SOME NEWER PHASES OF THE ANTI-TUBERCULOSIS WARFARE IN THE UNITED STATES.

S. Adolphus Knopf, M. D.,

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Read before the American Public Health Association, Washington, D. C., September 19, 1912.

(*Concluded*)

My communication on the subject of the newer problems and phases of the anti-tuberculosis warfare would not be complete nor up-to-date would I not mention here a new method of treatment for advanced cases. I refer to the operation producing artificial pneumothorax. This is one of the most valuable adjuvants in the treatment of this class of sufferers. For want of space I must refer for details concerning indications, technique, and results to the already considerable literature on the subject; particularly to the works of Forlanini,[6] Spengler,[7] Brauer,[8] and Saugman[9] of Europe, and Murphy,[10] Lemke,[11] Lapham,[12] Robinson & Floyd,[13] Balboni,[14] and others of our own country. All I may say here is that the results in the relief and not infrequently the seeming arrest of the disease in quite advanced cases has been surprising.

That we often encounter objections to entering a sanatorium even among the earlier cases and also the well-to-do, is a well-known fact. This prejudice on the part of patients to entering sanatoria arises mainly in their fear of having to associate with individuals whom they consider more ill than they are themselves. Education through appropriate literature and tactful explanation on the part of the physician who sends the patient to the sanatorium, are the only remedies for this sanatorium-phobia.[15] A more serious reason why the poor consumptive hesitates to enter or to remain any length of time in a sanatorium or hospital, no matter how attractive and well-equipped it may be and how kindly he may be treated, is the thought of those left at home who may have been more or less dependent upon him.

I know from my sanatorium and hospital experience how badly the patient will do when anxiety and grief is added to his physical suffering; how his appetite will improve, serious symptoms will subside when the cause

for his grief and anxiety has been removed. The care of the family when the tuberculous breadwinner is incapacitated, whether in sanatorium, hospital, or at home, is one of the newer phases in the anti-tuberculosis warfare which must receive our most serious attention. In Australia there exists a special tuberculosis invalid pension and ten shillings per week are granted to those in need and unable to work.

Among the following activities, which form the basis of our Health Department's work in New York, there may be relatively little that is new, but the summary of this tuberculosis work as it is now being carried on is a striking example of what can be done by an efficient health department of a great city.

There is (1) the notification and registration of all cases of tuberculosis, which was started in 1894. (2) The free bacteriolgical examination of sputum to facilitate early and definite diagnosis. (3) Educational measures of various kinds, circulars, lectures, newspaper articles; tuberculosis exhibits in the various parts of the city including outdoor exhibitions with moving pictures during the summer months. (4) Visiting of consumptives in their homes and continuous supervision of cases in tenement houses by a corps of trained nurses. (5) Free disinfection by the Department of Health, and issuance of orders for the renovation of rooms vacated by consumptives. (6) Reference of cases to proper charitable organizations. (7) The provision of five classes of institutions:

a. Free hospitals for advanced cases;

b. Free clinics for diagnosis and treatment of ambulant cases unable to go to sanatoria;

c. Free sanatorium for incipient and early cases;

d. Free day camps;

e. Establishment of the Tuberculosis Hospital Admission Bureau, for the proper selection of cases for institutional care.

(8) Forcing certain cases of patients into a hospital and retaining them there. (9) Enforcing regulations concerning spitting in public places. (10) Enforcing regulations forbidding use of public drinking cups. (11) Research studies concerning the mode of infection, the rôle of bovine tuberculosis, characteristic of the tubercle bacillus, etc.

An equally comprehensive program containing some newer phases of the problem and which in its ensemble might be considered a model for health ordinances for cities which are resorts for consumptives to follow, is contained in the report submitted to the Section on Preventive Medicine and Public Health of the American Medical Association at the session held in Los Angeles in 1911.* The subjects dealt with in these health ordinances are as follows:

* Report by Committee: G. Walter Holden, M. D., Denver, Colo., Chairman; W. Jarvis Barlow, M. D., Los Angeles, Cal., and H. Anderson, M. D., El Paso Texas, Journal A. M. A., Dec. 9, 1911, Vol. LVII, pp. 1897-1900.

I. *Registration.*

Physicians' Duty to Report All Cases of Tuberculosis.

Duty of Authorities and Hospitals, Sanatoria, etc., to Report all Cases.

Duty of Managers or Owners of Hotels, etc., to Report all Cases.

Duty of Department of Health to Visit Patients in Hotels, etc., not Attended by Physicians, and to Leave Literature.

Duty of Department to Make Microscopic Examinations, and to Leave Literature, at Request of Physicians.

Duty of Department to Keep a Record of all Cases.

Penalty for Wilful Misstatement by Physician.

II. *School Children.*

No Tuberculous Child, or Child of Tuberculous Parents is to be Admitted to School Except by Permit from Department.

III. *Disinfection.*

Premises Vacated by Tuberculous Persons to be Disinfected. Such Premises not to be Re-occupied Except as Permitted by the Department.

Placard to be Placed on Door of Infected Premises.

Unlawful to Dispose of Belongings of Diseased Persons Unless Disinfected.

IV. *Public Fountains and Drinking Cups.*

No Fountain is to be Erected in Public Places or Buildings Unless Properly Constructed; No Drinking-Cups to be Attached to Public Fountains Unless Provision be Made for Properly Rinsing.

V. *Expectoration.*

Illegality of Expectorating in Public Places.

Posting of Notices Regarding Danger and Illegality of Expectorating.

Duty of Police and Others to Cause Arrest of Offenders.

Placing of Cuspidors for Use of Public and Employees.

VI. *Laundry.*

No Linen of Tuberculous Persons is to be Handled at Public Laundry Unless Sterilized.

VII. *Street Sweeping.*

Frequency of Sweeping and Removal of Dirt Once every 24 Hours.

Time and Method of Sweeping and Removal of Dirt between 6 a.m. and 11 p.m. and Previous Flushing and Sprinkling with Water.

VIII. *Food and Drink.*

Premises where Food is Sold Not to be Occupied as Living Rooms.

Articles of Food Carted Through Streets to be Properly Protected from Dirt, Dust, and Flies.

Articles of Food Offered for Sale to be Properly Protected from Dirt, Dust, and Flies.

No Tuberculous Person to be Employed at Manufacturing or Selling Foodstuffs.

Penalties.

IX. *Garbage.*

Duties of Owners, Tenants, etc., to Provide Proper Receptacles for Garbage.

Manner of Collection and Removal of Garbage, Once in 24 Hours in Watertight Tank and Closely Fitting Cover.

Garbage Not to be Used for Filling-in Purposes, or as Food for Animals Unless First Cooked.

X. *Manure.*

Accumulation of Manure in Vicinity of Dwellings Illegal Except as Approved by Department of Health.

Manner of Removal and Disposal of Manure, etc., Removed at Intervals Prescribed by Board of Health.

XI. *Smoke.*

No Dense Smoke to be Emitted Into Open Air from Any Building or Engine.

There is one feature of the dissemination of tuberculosis which, to my mind, has been overlooked by most of our authorities. I refer to the tuberculosis germ carrier who is not under the care of a physician. Such individuals are far more numerous than we think. Among these are, first of all, the patients who, although known to be tuberculous, think themselves free from tuberculosis germs because one or two examinations of the sputum were negative. Unfortunately, there are still some physicians who likewise consider the presence of the bacillus in one or two specimens of sputum as the only positive evidence of tuberculosis.

Besides the typical tuberculous patient without medical supervision or who has passed through the hands of a careless practitioner, there are the vast number of patients who go through life with relatively little functional disturbances, nay, even attaining old age because an early attack of tuberculosis has conferred upon them a relative immunity. Then there is another group of tubercle bacilli carriers who, on examination, show almost a normal chest and still their sputum is positive. I do not even venture an explanation for such a condition, but all those who see and examine a good many patients will and must admit that these seemingly physiological bacilli carriers exist.

The greatest danger arises, of course, from the bacilli carriers without a home. Our Tuberculosis Committee recently made an investigation which revealed that among the 29,460 cases of tuberculosis registered at the Department of Health of New York 5,053 were homeless. Of these 1,064 were actually without any homes, 2,099 were reported as "not found," 1,346 lived in lodging houses, and 544 in furnished rooms.

Aside of these homeless individuals there is that, alas, vast number of tuberculous patients among all classes of society who, although they know that they are bacilli carriers, still are careless in the disposal of their sputum or become so from the lack of provision of sputum receptacles.

The remedies I venture to offer to do away with the source of infection arising from these knowing and unknowing bacilli carriers are as follows: examination and reëxamination for tuberculosis, including repeated sputum examinations, of every individual who desires to seek employment in no matter what sphere. By such a policy the number of careless, homeless bacilli carriers may certainly be diminished. A careful physical examination should also be made of all school children and students in high schools and colleges, parochial and private schools, also of the inmates of prisons and reformatories, and of all muncipal and federal employees and officers.

Because of the very nature of the work of our post-office employees,[16] their handling of mail bags, packages, letters, and stamps which in turn are handled by the public, the stamps being moistened with saliva by the aid of the tongue, these employees should be examined and periodically reëxamined and no bacilli carrier permitted to continue to do work whereby he may become a source of infection. When one watches the selling of stamps at the average post-office in city or country and sees how the gummed side of the stamp passes over the window ledge which is fingered by hundreds of individuals every day, one cannot help feeling convinced of the likelihood of the transmission of tuberculosis and other microbic diseases by stamps and even letters. It should be taught to old and young that licking stamps is dangerous because of the possibility of contamination.

The masses should be educated to the effect that the sputum of any individual may be infectious, that it is dangerous to expectorate anywhere except in the middle of the street where the sputum may have a chance to be rendered inoffensive by the sun and air and will have little chance to be carried on the soles of people's feet into the houses. In public buildings and wherever possible sputum receptacles should be installed with covers to prevent flies and other insects from getting at the sputum. They should be well kept and frequently cleaned, and above them should be placards explaining the danger from promiscuous spitting. But instead of the headline "Do not spit here" or "Do not expectorate" we should rather attract the attention of the individual who must spit by the positive command "Spit here."

Everybody should be taught that to cough without holding one's hand before his mouth is not only impolite but dangerous. All kinds of germs such as those of tuberculosis, grippe and pneumonia, may be expelled with the small drops of saliva ejected during the so-called dry cough. The danger from droplet infection should be mentioned in the circulars prohibiting indiscriminate expectorating.

The masses should be most thoroughly educated concerning the danger arising from the careless spitter. This is, to my mind, one of the most important ways of diminishing the sources of infection arising from the bacilli carriers. For the comfort of the individual who may be so unfortunate as to be a tuberculosis bacilli carrier, let it be known, however, that by the proper personal care he may become a perfectly safe individual to associate with. His case is not at all to be compared with the typhoid fever carrier who should be isolated until all evidence of his being the disseminator of disease germs no longer exists.

The Chautauqua Salute, the waving of handkerchiefs by the entire congregation in honor of some person present or to express their religious joy, is, to my mind, a dangerous practice, as these handkerchiefs may often contain dried infectious pulmonary and nasal secretions. This custom should be suppressed by enlightened clergymen. It is particularly dangerous within doors.

The next important problem and a relatively new one is the employment of a discharged tuberculous patient. Until recently it was held that the best occupation for the cured tuberculous individual was farming, horticulture, or a similar outdoor occupation. When the individual who has contracted tuberculosis had been a farmer, the return to outdoor work when cured might be the ideal, but to make a tailor, a shoemaker, a carpenter, a bookkeeper, clerk, or teacher into a farmer after he has spent six months to one year at a sanatorium in an enforced physical idleness is an entirely different problem. Those who have studied the question most thoroughly are now convinced that it is best to return the cured patient not to his former environment, but to let him go back to his former occupation under improved conditions with his new knowledge of hygiene, his new need of fresh air and the experience he has gained as to the amount of work he can do.

Many of our more progressive sanatoria resort to occupation therapy as a means of strengthening and improving the patient's health. Graduated labor is, to my mind, one of the most valuable modern adjuvants we have in the hygienic and dietetic treatment of the tuberculous patient. The problem of occupying the patient arrested or cured, discharged from the sanatorium is a difficult one. He is rarely strong enough at once to return to his former occupation and resist the debilitating influence of overcrowding by day and night. I would suggest, therefore, in connection with our system of sanatoria and sanatoria-hospitals, intermediate stations which you might call health work stations where patients may be able to resume their former occupation in exceptionally good sanitary environments for at least six months after their discharge from the sanatorium. I am convinced that such intermediate stations would greatly reduce the number of

relapses and much of the vast sums we are now spending for the care of tuberculous individuals would not have been spent in vain.

In a recent paper read before the State Medical Association of New York, I showed that we spent last year in our city over $2,000,000 for the care of the tuberculous and yet of the estimated 50,000 tuberculous patients of New York City 10,258 died. This is far too large a percentage for the sacrifices made by the taxpayers and the medical profession. I hold the frequent relapses and the hasty return of the half-cured patient to his former occupation in the same environments responsible for this altogether too great morbidity and mortality. Dr. David R. Lyman of the Gaylord Farm Sanatorium at Wallingford, Conn., has demonstrated that the arrested cases when following their usual trade under better hygienic conditions, live better than if they had endeavored to learn a new trade.

Professor Fisher showed that in this Gaylord Farm Sanatorium, with which he is also connected, it actually "pays" the State of Connecticut in cold cash to save the lives of consumptives, especially incipient consumptives. The $200,000 expended in this work has resulted in restoring so much working power that already those discharged from the institution have earned $300,000 and still have a potential earning power, good for many times this amount. On the basis of this experience, he concludes that every dollar expended in such institutions saves in a short time at least five dollars, to say nothing of the gains to the consumptive himself. At present, about fifteen million dollars a year is put into the tuberculosis fight in the United States. When several times this amount will be invested—enough to isolate or at any rate "educate" every one of the million odd consumptives in the United States, now spreading infection —we may expect to see the beginning of the end of the great white plague. We must be more rational in our prophylaxis as well as our treatment and in the aftercare of our consumptives, otherwise we will never master the disease.

As one of the newer problems in our fight against tuberculosis, I would be remiss in my duty would I not mention the all-absorbent question of the high cost of living. Not to have enough food or not enough nutritious food predisposes to tuberculosis. Every phthisiotherapeutist knows that ample food and good food is one of the essentials in the successful treatment of tuberculosis; and furthermore, those of us who are interested in the treatment of the tuberculous poor in institutions or at home know what a problem it is nowadays to make both ends meet, and yet provide enough nutritious food for those under our care.

I am not enough versed in statesmanship or politics to suggest a remedy along that line. The only thing which appeals to me likely to serve as an amelioration or perhaps even a rational remedy for the situation is to follow the advice of men like Mr. James J. Hill,* Professor Cook of Yale,[17]

* Letter to the *New York Times* of August 24, 1912.

and the numerous experts of our Agricultural Experiment Station. Philanthropists and generous-minded citizens in general should coöperate with these experts to make agricultural life profitable and also pleasant. When by the provision of sound and sane social enjoyment and intellectual advancement for the young generation of farmers, living in the country can be made as attractive to young people as living in the city, when the farmers will have been taught to double and treble the yield of their products, and when transportation to the consumers will be made easy, farming will become an occupation to be sought by many. Its returns will be profitable and the consumer will receive the products which he needs at a cost within his means.

I come lastly to that phase of the tuberculosis problem for which it is difficult to find a name, but which we might call "shifting the responsibility,"—sending patients away to be cared for by others. Whether this shifting of responsibility is done conscientiously or not, it is not fair. The Governor who pardons a tuberculous prisoner without being sure that this tuberculous individual will not become a burden to his family or the community, is not doing a fair thing. The Eastern municipality, physician or any individual who sends the poor consumptive to a Western state to let him there fight for himself until he becomes a burden to the strange community, is not doing a fair thing.

How keenly this injustice is felt you will see from the fact that near the middle of April of this year, at the call of Gov. O. B. Colquit of Texas, a Southwestern Conference on Tuberculosis convened in Waco, Texas, to consider "ways and means of aiding the tuberculous stranger in the Southwest and to discourage further migration of indigent consumptives to southwestern states."

The steamship companies which send their agents throughout Europe, advertising cheap rates, holding out great promises to the emigrants and bringing them here with tuberculosis to become a burden to the community, do not do a fair thing.

What is the remedy? Let us enlighten our pardoning governors on this subject. Let them be impressed with the fact that any discharged tuberculous prisoner with an open tuberculosis constitutes a menace to the community. The discharged or pardoned tuberculous prisoner is often, because of his social status, even a greater menace than the ordinary tuberculous individual. If special sanatoria for this class of patients are needed let them be established by the state.

Against the injustice of unloading the consumptive poor of one state into another, the above mentioned conference in Waco suggested a very good remedy which was: advocating publicity as to lack of free hospitals for stranger consumptives in those sections, the inability of charity organization societies to aid such, the difficulty of securing suitable employment,

and the fact that consumptives coming to the Southwest should have funds sufficient to carry them for about one year. Of course, making the problem of the consumptive poor as much a state and federal problem as it is now a city and state problem, would be the most rational solution. Let a federal department of health assume the responsibility of controlling the care of all the needy consumptives and let state and city anti-tuberculosis agencies act under its supervision, and such injustice as making one state pay for the consumptive poor of others would not be possible. A good suggestion was made at the above-mentioned conference, namely, to call upon the federal government to convert abandoned forts and military reservations in the Southwest into sanatoria-hospitals for consumptives. In the meantime let every citizen realize the enormity of the offense of sending a consumptive without means to another state, and let him be punished for it if discovered.

Again, what can we do to stem the tide of tuberculous immigration? This is also a large subject and worthy of separate consideration.* Tuberculosis must be considered a world problem, a problem for every civilized nation. Let European governments understand that they must take care of their own tuberculous people as we take care of ours, and that in the end, by united efforts, it may be possible to conquer the white plague in all countries.

Every prospective emigrant should be examined to ascertain his freedom from tuberculosis by two competent medical men, one appointed by his home government and one by the steamship company which is to transport him to this country. A certificate showing freedom from tuberculosis, signed by these two medical men, should be in the possession of every emigrant wishing to come to these shores. An individual discovered to be afflicted with disease should be returned to the care of the authorities of the city or village from which he came with the diagnosis and recommendation for treatment. Exceptions can and should be made in the case of an individual with ample means who is simply visiting, or seeking to recuperate his health by a change of climate, or desirous to enter an American sanatorium for treatment.

The laws relating to deportation should be changed to the effect that if the holder of any such certificate, or any immigrant develops tuberculosis within six months to one year from the date of his arrival here and becomes a charge to the community, he shall be deported to the port whence he came. The expenses for this deportation should be borne by the steam-

* I made it the theme of a special paper, entitled "The Immigration of the Tuberculous into the United States: A Problem for Every Nation." It was intended to be read before the Congress on Tuberculosis in Rome last April, but owing to my inability to be there it could only be read by title, but it was read in full at the recent Symposium on Immigration of the meeting of the American Academy of Medicine in Atlantic City, and appeared in the *Medical Record* of July 13, 1912.

ship company who brought the immigrant to our shores, and not by the State Board of Charities.

The suggestion has been made that physicians of the Public Health and Marine Hospital Service be stationed at the important points of departure in Europe so that each emigrant can be thoroughly examined, and those entitled to a clean bill of health be allowed to take passage. I question whether the international law would sanction such a procedure. Secondly, there are too many minor ports from which emigrants could take passage and escape the United States government physicians' examination. Of greater value would it be for foreign governments and steamship companies to make it known that if a man expects to stay in the United States he must not become a public charge; that he must be physically, morally and mentally sound. With such publicity and the additional examination in the manner above outlined, the United States Government will be less burdened with the care of tuberculous aliens who, uncared for, are a constant menace to the community.

For want of space I must refer my readers for further details to the article on this subject in the *Medical Record* of July 13, 1912. I might, however, add here a very valuable suggestion made at the recent International Tuberculosis Congress in Rome by Dr. Antonio Stella of New York. It was to the effect that every emigrant should be insured against tuberculosis, the cost of insurance to be added to the price of the steamship ticket, the policy entitling the bearer to return transportation and free treatment in a sanatorium, in the event of his contracting tuberculosis within a specified time.

I hope that through federal control we may obtain fair play regarding tuberculosis immigration from one state into another, and through international agreement, from one country into another, and may thus justly distribute the burden we have to bear and I am sure are willing to bear. The eradication of tuberculosis from our midst is not an easy thing. The greatest of all predisposing causes, poverty, want, bad housing, insufficient food, lack of employment are not new phases of the tuberculosis problem. They confront us at every step, more urgently today than yesterday. They are known to you as they are known to me and they will need attention, for not until there will be more social justice, a more wise understanding and generous fulfilment of our obligations toward our less fortunate brothers and sisters, may we hope for victory over the great white plague. Fortunately, the skies are clearer. Instead of asking "Am I my brother's keeper?" many truly great and noble-minded men and women say "We must be our brother's keeper." According to the fourth annual statement issued by our National Association, nearly $19,000,000 were spent in the anti-tuberculosis campaign in the United States during the last year.

Thus, it is true, much has been done of late, but there is much more for all of us to do. May our labors be blessed and crowned with success!

[6] "Zur Behandlung der Lungenschwindsucht durch künstlich erzeugten Pneumothorax;" by C. Forlanini; *Deutsche med. Wochenschr.*, 1906, XXXII, p. 1401.

[7] "Dauererfolge bei Behandlung schwerer einseitiger Lungentuberkulose mittelst künstlichen Pneumothorax; by Lucius Spengler; *Munch. med. Wochenschr.*, 1911, LVIII, p. 460.

[8] "Der therapeutische Pneumothorax; by L. Brauer; *Deutsche med. Wochenschr.*, 1906, XXXII. p. 652.

[9] "Ueber die Anwendung des künstlichen Pneumothorax in der Behandlung der Lungentuberkulose;" by C. Saugman; *Zeitschrift f. Tuberculosis*, 1908, XII, Bd. 1.

[10] "Surgery of the Lung;" by J. B. Murphy; *Jour. Am. Med. Assn.*, 1898, XXXI, pp. 151, 208, 281, 341.

[11] "Report of Case of Pulmonary Tuberculosis, Treated with Intrapleural Injections of Nitrogen, with a Consideration of the Pathology of Compression of a Tuberculous Lung;" by A. F. Lemke; *Jour. Am. Med. Assn.*, 1899, XXX, pp. 959, 1023, 1077.

[12] "The Treatment of Pulmonary Tuberculosis by Compression of the Lung;" by Mary E. Lapham; *Amer. Jour. of Med. Sciences*, April 1912.

[13] Artificial Pneumothorax as a Treatment of Pulmonary Tuberculosis;" by Samuel Robinson and Cleaveland Floyd; *Arch. of Internal Med.*, April 1912, Vol. 9, pp. 452–483.

[14] "The Treatment of Pulmonary Tuberculosis by Artificial Pneumothorax, According to the Method of Forlanini;" by G. M. Balboni; Med. Communications of the Massachusetts Medical Society; Vol. XXIII, 1912.

[15] "The Unjustified Prejudice of Tuberculous Patients Against Sanatoria and Hospitals," *Medical Record*. September 28, 1912.

[16] Tuberculosis in Post-Offices and Postmaster General's Order No. 855. Knopf: "Tuberculosis a Preventable and Curable Disease," pp. 18–25.

[17] "Seven Blades Now Where One Grew"; Prof. A. S. Cook, *New York Times*, August 24, 1912.

AN EXPERIMENT IN SCHOOL-ROOM VENTILATION.

FREDERIC BASS.

Read before the Sanitary Engineering Section, American Public Health Association, Washington, D. C., September, 1912.

The literature on the subject of ventilation of enclosed spaces indicates a general agreement amongst investigators and students so far as the mere inclusion of the important factors is concerned, but when the opinions on the quantitative inter-relations of these factors are examined, there is a great divergence and often it is extreme.

The time has arrived when the value of attempting to ventilate school buildings and hospitals *at all* is seriously questioned by many school hygienists and physicians. The fact that the existing conventional ventilating system does not always satisfactorily perform its functions when carefully designed has caused this dissatisfaction. The engineer, however, cannot admit so easily that this problem is insoluble, at least not until all the fundamental physiological principles have been elucidated and the data for truly scientific design is at hand. The gathering of this data may require some years of careful investigation, meanwhile more empirical efforts must be in order. Reflection will indicate that no system of ventilation, especially in school-rooms, will do much to prevent the spread of communicable or other diseases. Direct and intimate contact and proximity, the optimum conditions for infection of one person from another, are far too common and constant both in and out of the room to allow any serious interruption by currents of air moving in any direction whatsoever. The time of travel from one person to another is too short to permit of destruction of pathogenic bacteria by any quality of the air.

Evidently, then, the problem is principally one of physiology and not one of pathology; we aim to maintain a normal body at its greatest efficiency. We can hope to furnish air of the desired quality, in the required quantity at the place where it will be most efficient. What the best quality or the best condition of the air of a room should be we cannot today be sure. We have the general rule of not less than thirty cubic feet per minute per person as a guide to quantity when the ordinary system of horizontal circulation is used in connection with a single or double inlet and outlet.

In November, 1911, the University of Minnesota granted to the speaker the sum of $200 to be used in the study of school-room ventilation. For some time the inefficiency of the ordinary system of school-room ventilation had appealed to him; it did not seem reasonable that it should be necessary to furnish for ventilation to each person 100 times as much air as he breathed in a unit of time. It seemed to him that the principle

of dilution of air might give way to nature's method of displacement; a method might be devised whereby the entering air would be applied at the point where it would be used, namely, near the face, and then when exhaled taken away, to be used no more.

Such a system would be ideal for investigating the physiological effects of air in various quantities and of various qualities. It should be said here that the great variation in the personal equation of the human subject of experiment makes it desirable to use as many subjects as possible simultaneously in order to get average and usable results. The follow-

Fig. I.

ing paragraphs describe the apparatus used in experiments now in progress at the University of Minnesota.

A school-room on the first floor in the Jackson School at Minneapolis was assigned to the speaker for experimental purposes by the Minneapolis Board of Education. Heating of the room was by direct radiation. The air to be delivered to the pupils in the room was taken in through a window in the basement and passed over two Vento radiators to a Webster air washer and humidifier, thence to a heating coil, from which the air was blown to the outlets in the room by means of a Sirocco blower. The main duct from the blower was carried along the ceiling at one end of the base-

ment room immediately below the room in which the pupils to be subjects of the experiment were located and from it three ducts were extended parallel to the rows of desks. From these ducts, the air was carried through two-inch risers extending through the floor to each desk in the room above, at which points it entered the room through funnel-shaped orifices.

Previous experiment with a single desk and funnel ventilator had shown that with seven cubic feet of air per minute, the head and shoulders of the pupil could be surrounded by air moving at a velocity sufficient to carry

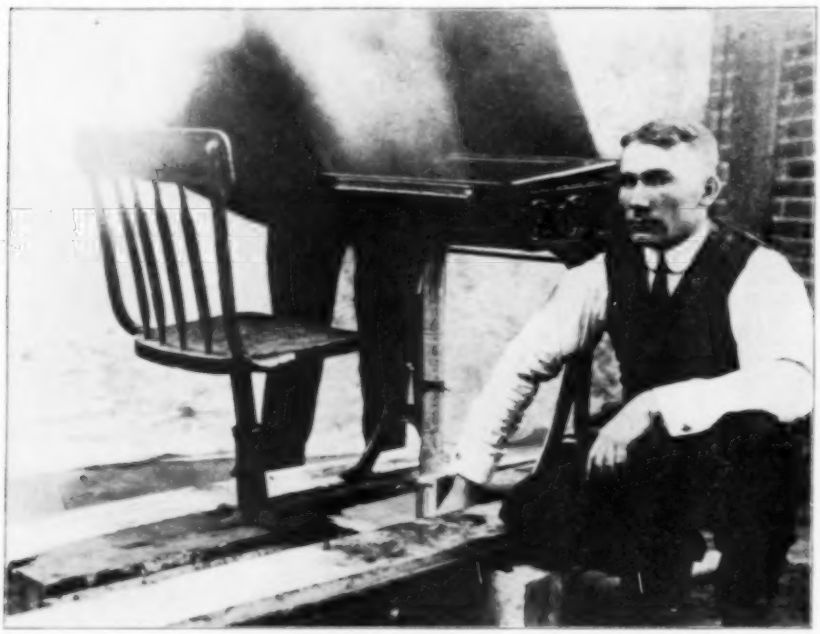

Fig. II.

away the breath but still not great enough to be objectionable. In this way it was made certain that each pupil would actually receive the air both in quantity and quality that was desirable, and by means of a number of openings in the ceiling, through which the air was drawn by an exhaust fan, it was made equally certain that the exhaled air would be immediately removed from the room.

In the preliminary experiments to determine the best type and location of orifice for admission of air to the room, the first form experimented upon was an elongated orifice or slit in the front edge (the edge nearest the pupil), of the desk. (Figures 1, and 2 show views of this orifice.) The funnel

type (shown in Figure 3) gave a much better distribution of air and for other reasons was much better adapted for use in a school-room, and it was accordingly adopted. (Figure 4 shows the school desks themselves with a number of these orifices in position. Figure 5 is a view in the basement room below the room fitted out, and shows the heating coils, washer, blower, regulating devices, as well as the system of pipes used to distribute air to the desks. Figures 6 and 7 are plans of the air distributing and air removal systems, respectively.)

The cumbersome appearance of this apparatus is due to the fact that

Fig. III.

the washer, blower and heating coils were loaned and it was necessary to use the particular apparatus available, although it was many times larger than necessary. The direct radiation in the room, the temperature of the entering air and the temperature of the water in the air washer were automatically regulated by thermostatic control put in by the Johnson Service Company. The piping and sheet metal work was done by the Waterman-Waterbury Company of Minneapolis. In addition to the above described apparatus, an ozone generator was installed by A. R. Willford of Minneapolis.

The plant was kept in operation for about four weeks, and during that

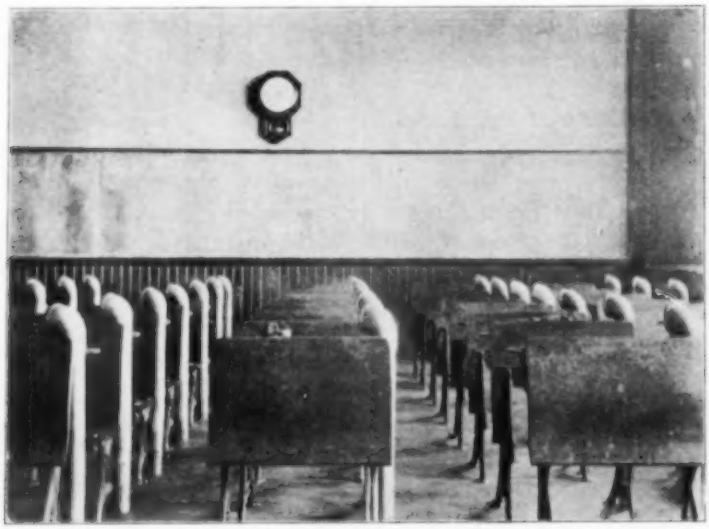

Fig. IV.

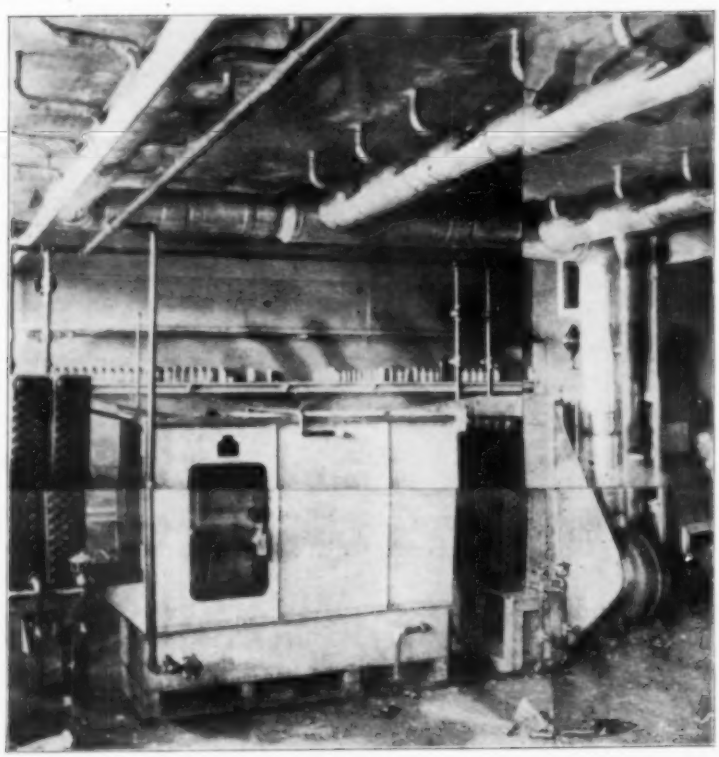

Fig. V.

time it was found possible to ventilate the room satisfactorily, with the crude apparatus installed, with eight cubic feet of air per minute per pupil. During the last few days the ozone apparatus was in operation, and although the cost of the current to operate it was but a few cents per day, a decided "freshening" of the air was noticeable. On four successive days, experiments to determine the mental ability of two selected groups of pupils were carried on by Prof. J. B. Miner, of the University of Minne-

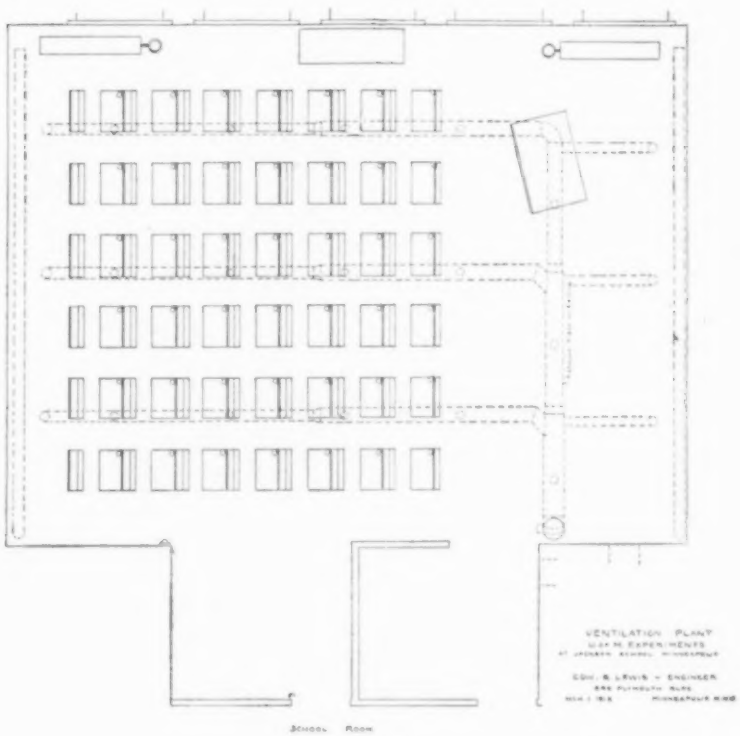

Fig. VI.

sota, first under this system and second under the old system of ventilating providing twenty-five cubic feet of air per minute per pupil, but no perceptible difference in mental capacity of the pupils was noticeable. The test, however, was probably unsatisfactory on account of the short duration of the experiments.

There are several mechanical difficulties to be met, such as the heating of the air at the floor level and the prevention of crowding the air all to the rear of the room. The former probably can be met by having air outlets near but not in the floor as well as in the ceiling, the latter by extra inlets

in the front desks faced toward the front of the room and also by providing larger outlets at the front.

It is expected during the coming year, with the permission of the Minneapolis Board of Education, to continue the experimental work, which will be mainly physiological. It is intended that this room, together with a similar adjoining room under the ordinary system of fan ventilation as a control, will be in operation. The environment of each child outside of

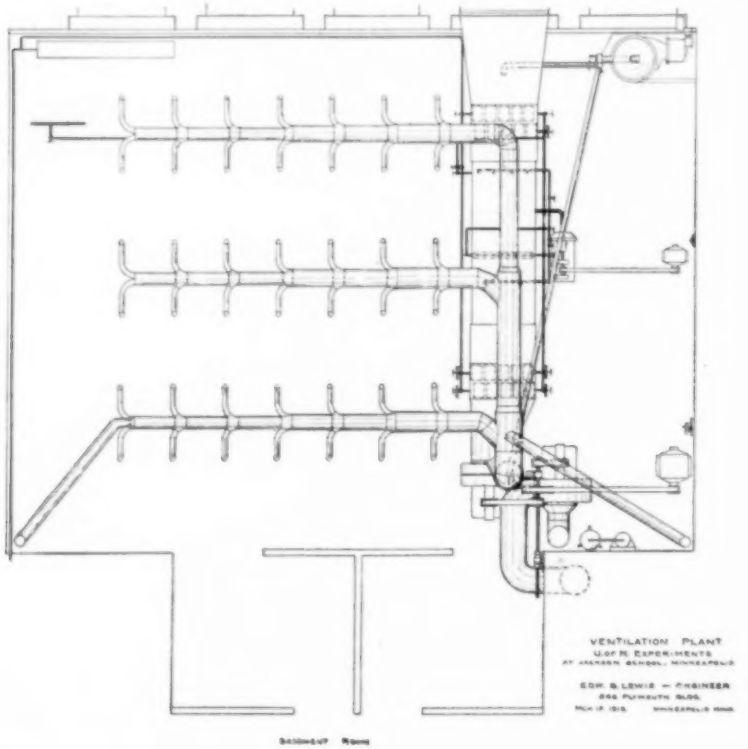

Fig. VII.

the school building will be carefully recorded. The weight, blood pressure, respiration, pulse and other necessary data will be obtained during a series of experiments lasting several months, and it is hoped that some connection between the physiological condition of a school child and the quality and quantity of air which he receives may be determined. The apparatus which has been described and which has been in use for over a month, has shown conclusively that eight, and perhaps as low as six, cubic feet of ozonized air per minute per pupil will be sufficient for ventilation when it is properly distributed.

The cost of installation of such a system in a new building equipped with the new type of hollow standard desks acting as risers and with a modified funnel outlet, should not exceed that of the present ordinary systems when the diminished size of main ducts, fans and engines or motors is considered.

AN OUTBREAK OF TYPHOID IN BELLEVILLE, ILLINOIS.

HORATIO N. PARKER,
University of Illinois.

About the middle of March, 1912, Dr. B. H. Portuondo, health officer of Belleville, requested B. R. Rickards, who was then chief of the Department of Municipal and Sanitary Dairying of the University of Illinois, to look into the typhoid situation in Belleville, a city of 21,100. Professor Rickards detailed the writer to the city and gave him charge of the investigation.

In conference with Doctor Portuondo it was found that he had collected data in a sufficient number of cases to make him suspect that the infection was spread by the milk of dairy "A," and he further suspected that the cause of the trouble was a carrier, for the dairyman's wife, some months before, had been discharged from a local hospital as cured of typhoid fever, but other factors were pointed out as possibly being the cause of the epidemic. This preliminary investigation was most helpful inasmuch as in but few places in Illinois is typhoid fever a reportable disease, and so it often happens that the local health authorities have no idea of the degree of its prevalence, consequently it is slow work to get at the facts.

In Belleville the gathering of further evidence was greatly facilitated by the hearty coöperation of the physicians and hospital authorities. As the facts accumulated it became evident that certain factors suspected of being operative were not so and that all signs pointed toward the dairy. Here are the main facts:

In the latter part of April, 1911, some cases of typhoid fever appeared in the neighborhood of dairy "A." Some of the patients were customers of the dairy, but at this late date it is impossible to tell whether or no they contracted the fever from the milk supplied by the dairy. One of the earliest cases of which trace was obtained was that of Mrs. A who came down with the disease about May first and who was in one of the local hospitals from May 22 to June 12. On A's milk route there occurred in June four (4) cases of typhoid fever that, perhaps, were contracted from A's milk, but they might have had some other origin.

The record compiled in March, 1912, by careful inquiry amongst the practicing physicians and hospitals, showed eighty-eight cases distributed as follows:

JULY 25, 1911-MARCH 26, 1912.

Cases.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
	2	2	2	1	6	5	5	24	41
Percentage supplied with milk by "A"	50	50	0	100	100	60[a]	100	83[b]	80[c]

[a] 100 per cent. if customers of dairymen known to have purchased milk from A are included.

[b] 96 per cent. if customers of dairymen known to have purchased milk from A are included.

[c] 83 per cent. if customers of dairymen known to have purchased milk from A are included.

Besides these cases there was one which was contracted out of the city.

Too much confidence should not be placed in the completeness of the record of the first four (4) months, for it may be that more thorough search would have discovered other cases.

These eighty-eight cases were distributed on several milk routes as follows:

Dairy.	Cases.	Percentage of Total Number of Cases.
A	70	79.5
B	4	4.5
C	2	2.3
D	3	3.4
E	2	2.3
F	1	1.1
G	1	1.1
H	1	1.1
Condensed Milk	1	1.1
Own cow	2	2.3
Unknown	1	1.1
	88	99.8

Of the seventy cases on A's route, fifty-four, or seventy-seven per cent., were certainly primary cases. The other sixteen cases may have been either secondary cases, due to contact, or primary cases from the milk. All of the cases on the other milk routes were primary. Dairymen B and C stated that they bought milk at different times of Dairyman A to make up the full quantity of milk needed for their routes. So seventy-six cases, or 86.3 per cent. of the total number of cases, may have had A's milk.

Dairyman A stated that once or twice he had sold milk to Dairyman D but this was denied by D. It is not known whether any of the other dairymen purchased milk of A or not. One of the cases, where the patient had milk from his own cow, was in all probability a contact infection for the patient was nursing typhoid cases in one of the hospitals. It is interesting to know that much of the milk was cooked because many of the people were German-Americans and were accustomed to heat or, as it was said, boil their milk, and because before the epidemic was over Doctor Portuondo advised the boiling of milk. Evidently it either was not heated to a temperature high enough to kill the germs or it was returned to the original container where it was reinfected.

The distribution of cases, as regards sex and age, is set forth in the table on page 489.

The facts brought out by the table (page 489) may be summarized as follows:

	Cases.	Percentage of Total Cases.	Deaths.	Percentage of each sex and of Total Cases.
Male	35	39.8	0	0.0
Female	49	55.7	5	10.2
Sex Unknown	4	4.5	1	25.0
Total	88	100.0		6.8

Of the six (6) deaths three (3) were on A's route, one was on B's route, one on C's, and the dairymen who served the other decedent is unknown. B and C are known to have purchased milk from A.

Dairy "A" in the middle of March had about 150 customers. It was located at the southern edge of the city in a populous district. An inspection of the premises showed the barn to be a fairly built inexpensive structure that was well cared for but which was surrounded by a number of insanitary privies. The herd was not properly looked after for the flanks of many of the cows were caked with dirt. The milk house which was between the barn and the dwelling was immaculate and it was evident that great pains were taken to keep utensils, cloths, etc., clean. Milk was peddled from a wagon in which it was carried in two cans from which it was drawn into a measure by a faucet at the bottom of the cans. It was stated that the milk and utensils were cared for almost wholly by Mrs. X

	Cases.	Percentage of Total Cases.	Deaths.	Percentage of Mortality.
0–5 years			0	0.0
Male	5	5.7		
Female	4	4.5		
Sex unknown	1	1.1		
6–10 years			0	0.0
Male	10	11.4		
Female	8	9.1		
11–15 years			1	9.0
Male	5	5.7		
Female	6	6.8		
16–20 years			3	15.8
Male	4	4.5		
Female	14	15.9		
Sex unknown	1	1.1		
21–30 years			0	0.0
Male	8	9.1		
Female	9	10.2		
31–40 years			1	16.6
Male	2	2.3		
Female	4	4.5		
41–50 years			1	25.0
Male	0	0.0		
Female	3	3.4		
Sex unknown	1	1.1		
51–60 years			0	0.0
Male	1	1.1		
Female	0	0.0		
Age Unknown			0	0.0
Male	0	0.0		
Female	1	1.1		
Sex Unknown	1	1.1	0	0.0
	88	99.7	6	

who was occasionally helped by the maid, and that Mrs. A only rarely helped with the milk and utensils. While this undoubtedly was the honest belief of the family it seemed that Mrs. A might have more to do with the milk than was realized for at the kitchen sink there was opportunity to handle things that went into the milk house.

Blood samples were taken from Mrs. A, Mr. A, the maid and two male employees; of these the only one that gave a positive Widal test was that from Mrs. A.

Specimens of urine and feces were taken from Mrs. A and from Mrs. X. The urines showed no suspicious organisms, and the finding on the feces of Mrs. X was negative. The feces of Mrs. A showed actively motile bacilli that produced no gas and no decolorization in neutral red agar, had a faint colorless growth on potato, failed to coagulate milk, produced acid and no gas in dextrose broth, produced no gas in lactose broth, none in mannite broth and which gave a positive macroscopic test from which it was concluded that Mrs. A was a carrier.

The organisms were isolated by emulsifying one loop full of feces in 10 c. c. of sugar free broth and incubating the emulsion at 37° for one (1) hour previous to the inoculation of the plates.*

Previously prepared plates of Endo's medium were inoculated from the emulsion with a bent glass rod and were then incubated 15 to 24 hours at 37°. Suspicious colonies were then fished from the plates and by streak and puncture inoculated on slants of Russell's medium.† The slants were then incubated 8 to 18 hours.

The macroscopic test was applied by Martin Dupray; the rest of the bacteriological work was done in the Laboratory of Municipal and Sanitary Dairying of the University of Illinois.

Conclusions.

The important lessons that may be learned from the epidemic are:

1. Once more it is shown to be dangerous to permit anyone who has recovered from typhoid fever to engage in the dairy business or in the purveying of other foods unless it has been determined that he is not a bacilli carrier.

2. The necessity of making typhoid fever a reportable disease is emphasized. It seems certain that the Belleville epidemic would have been checked earlier had it been sooner known that the disease was unduly prevalent amongst the customers of the milk route involved.

* "The Rapid Isolation of Typhoid, Paratyphoid and Dysentery Bacilli" by Arthur I. Kendall and Alexander A. Day. *The Journal of Medical Research*, Vol. 25, p. 97, September, 1911.

† "The Isolation of Typhoid Bacilli from Urine and Feces with a Description of a New Double Sugar Tube Medium." F. F. Russell, *The Journal of Medical Research*, Vol. 25, No. 1, pp. 217-229, September, 1911.

3. Ignorance of the ways in which typhoid fever is spread is responsible for the disease getting into many communities. In this case no blame can rightfully be placed on anyone for the outbreak. At the time Mrs. A was discharged from the hospital knowledge of carriers was not so widely disseminated as it now is. Dairyman A had no reason to suspect his apparently perfectly healthy wife of infecting the milk. The citizens did not know that failure to make typhoid fever a reportable disease would deprive the health officer of information he must have to act intelligently and efficiently.

4. The remedy lies not in drastic laws but in a policy which shall aim at informing the public, as rapidly as possible, of the basic principles of preventive medicine.

METHODS FOR THE ERADICATION OF HOOKWORM DISEASE.

JNO. A. FERRELL, M.D.,
North Carolina State Board of Health, Raleigh, N.C.

Read before the General Sessions, American Public Health Association, Washington, D.C., September, 1912.

Hookworm disease may be eradicated by the effective application of simple methods, preventive or curative. Its eradication by preventive means is dependent upon the installation and uniform use of sanitary privies by all the people in infected areas. The curative method is based upon the successful treatment of every infected person. In a democracy the application of either method is dependent on teaching the people. The most apt method of teaching is by demonstration. The best demonstration of the disease and its importance is a cured person. Hence, the method thus far pursued in the South though general to a certain degree has been featured by curing sufferers.

The treating has been done by the general practitioners and by whole-time health officers representing the State Boards of Health and the Rockefeller Commission conjointly. The former numbering about 21,244 physicians have reported 68,377 treated cases up to June 30. The latter numbering fifty physicians in ten Southern States have treated, during the one and one-half years preceding June 30, 154,956 persons, making a total of 223,133 people treated. The 154,956 persons treated for demonstrative purposes have been reached by the campaign forces through state and county dispensaries for the free examination and treatment for the disease of all applicants. The same general plan for the dispensary work is followed throughout the South and was first used by the Porto Rican Anemia Commission.

The county is the unit for the dispensary work. It is conducted by a physician representing the State Board of Health. He begins the work by securing from the Board of County Commissioners a small appropriation of two hundred or three hundred dollars to defray the local expenses occasioned by the publicity work, cost for thymol, and traveling expenses of the microscopist who is his assistant.

The commissioners in making the appropriation designate five places in the county as dispensary points each of which, on a stated day of the week, have a dispensary for the four to eight weeks duration of the county campaign.

The work of the commissioners completed, the director sets about to secure a large attendance on the various dispensaries. By personal visit or letter he seeks and usually obtains the active coöperation of the doctors,

teachers, editors and two hundred or more of the leading citizens of the county.

In addition the county is flooded with newspaper announcements, posters, and handbills giving information relative to the itinerary, the bringing in of specimens of feces, etc. The crowd assembling on the first dispensary day represents usually the better element. It witnesses the use of the microscope, the collections of intestinal parasites, an exhibit of photographs of uncured and cured patients, charts, literature, etc., and much interest is aroused from the beginning. Each successive week finds the crowds increasing in size bringing back again and again those found infected until cures are made. The examination of anywhere from fifty to four hundred people daily is customary, all examinations being based on the microscopic recognition of the ova in the feces.

The county appropriation is of the utmost importance as it is an official announcement that hookworm disease is recognized as such a menace to life, health, happiness and useful citizenship that a special appropriation by the county for combating it is warranted. The wisdom of the investment is so promptly apparent that in North Carolina (my state) where fifty-three counties have appropriated more than $12,500 for this work I am yet to hear the first criticism from the most partizan or the most miserly citizen.

The results of treatment in many cases are truly marvelous. A gain of a pound daily is common. Patients brought in on stretchers have been restored to normal health in a few weeks at a cost of only a few cents. The witnessing by the people in all sections of the county of the transformation from invalidism, blighted ambition, misery, and poverty to health, happiness and productive activity does the teaching which excites them to action not only to cure the sufferers, but also to throw about all the people the needed sanitary protection. There is now seldom found skepticism or a lack of coöperation among the doctors, teachers, editors, officials, or others in those counties where the work has been conducted.

The installation and use of sanitary privies do not give to the layman apparant and speedy results yet it calls for an investment of several dollars for each family. This phase of the work, therefore, though progressing steadily has not yet made sufficient headway in rural districts to eradicate the disease by preventive measures. We trust, however, that contemplated measures for more rapid progress in this phase of the campaign will soon make it rival the gratifying progress being made in treating the disease.

BOOK REVIEWS.

Prevention and Control of Disease. *By Francis Ramaley, Ph.D. Professor of Biology in the University of Colorado, and Clay E. Giffin, B.A., M.D., Instructor in Surgery in the University of Colorado. Published in Boulder, Colorado, 1913. Cloth 4°, 386 Pages, $3.00.*

All those who have had practical experience in public health administration will be able to testify to the great aid and encouragement which they have received from the educated layman. Significant of the spirit of the times, is the large number of articles and books published dealing with public health subjects for the laity. The latest addition to this literature is the excellent book before us. In its twenty-five chapters it presents the lay reader with a concise, readable and generally accurate account of the cause and mode of transmission of the infectious diseases, with the mechanism of immunity and with the best methods of preventing these diseases. In order to do this logically and understandingly, the authors begin with a chapter on death-rates and disease prevention in general, and a discussion of various types of diseases and certain hygienic considerations. Then follow brief but adequate presentations of the germ theory of disease and other theories, a description of the life of microörganisms, plant and animal parasites, and microörganisms in air, water, and food. This brings the reader to infection and the spread of disease, and to disinfectants and their action. Two chapters are devoted to susceptibility, resistance, and immunity, and one to specifics in the treatment of disease. With this foundation the reader is prepared to enter upon the more special portion of the book, taking up first the subject of colds and their like, then typical filth diseases, and special types of filth diseases. After this come, in order, smallpox and vaccination, wound infections, diphtheria and pneumonia, contagious diseases of childhood, and three chapters on tuberculosis. The book closes with chapters on yellow fever and malaria, cancers and diseases of the second half of life. All the material is well chosen and exceedingly well presented, and though now and then we hold somewhat different views concerning the common mode of transmission of certain of the diseases, we heartily commend the book as a safe guide to the lay public. Here and there an error has crept in. Thus on page 302, the author states that the hay bacillus resembles the tubercle bacillus. Of course, he means the timothy grass bacillus. On page 307, Park is cited as authority for the statement that lesions in man due to the bovine form of tubercle bacillus are not less than 10 per cent. of those due to the human type. This is manifestly an error. In the discussion of measles, Goldberger's work is entirely overlooked, and the chapter on yellow fever takes absolutely no account of the interesting discoveries of the past few years. We should have liked to see much less emphasis placed on fomites as vehicles of infection, and contrariwise, much more on direct infection from the patient or from carriers. We find no mention of carriers in the discussion of cholera; in the excellent chapter on hookworm it would be well to include the term "ground itch"; in that on syphilis the term "chancre" is omitted, though the initial lesion is mentioned. In discussing milk-borne tubercle infection, the authors fail to mention pasteurization as the great preventive, and speak merely of barring from dairy employment all persons suffering from tuberculosis. It is evident that this will do nothing to prevent infections of bovine origin. The reviewer also feels that the rôle of flies in the spread of tuberculosis is very much less than one would believe after reading page 319. Flies undoubtedly do carry infectious diseases, notably the diarrhœal diseases and typhoid fever, but it must not be forgotten that the bacteria of these diseases are capable of great multiplication in milk and other foods.

The criticisms here made are but minor blemishes in an exceedingly well-conceived and well-written book, and can easily be cor-

rected in another edition. Meantime it would be well if this book could be widely read by the general educated public, for it gives a vast amount of accurate information and wholesome advice.

Charles F. Boldman, M.D.

Transactions of the Third Annual Meeting of the American Association for the Study and Prevention of Infant Mortality. *Cleveland, Ohio, October 2–5, 1912. pp. 383, American Association for the Study and Prevention of Infant Mortality, Baltimore, Md., 1913.*

This volume, recently distributed among its members by the American Association for the Study and Prevention of Infant Mortality, presents in systematic and attractive style the forty or more addresses and committee reports heard at the Association's meeting in October. The convention was opened by an address of welcome from the Hon. Newton D. Baker, mayor of Cleveland, after which the president of the Association, Dr. Cressy L. Wilbur, reviewed some of the more urgently needed measures for the prevention of infant mortality in the United States. Doctor Wilbur emphasized the necessity for improved vital statistics, for maternal nursing, for pasteurization "of all doubtful milk," for the control of midwives, etc.

Following the general sessions, special section meetings were held, in which the several committees of the organization made their reports, accompanied by addresses on allied subjects. The phases of the problem to which these "section meetings" devoted their special attention correspond to the subcommittees through which the work of the Association is carried on, and may be indicated by the following headings:

1. Birth Registration.
2. Continuation Schools (Education).
3. Eugenics.
4. Progress in Preventive Work.
5. Midwifery.
6. Housing.
7. Nursing and Social Work.

It is impossible to attempt to discuss the many admirable papers presented to these committees. The conference on eugenics was particularly rich in valuable contributions made in the addresses of such authorities on this subject as Prof. H. E. Jordan, Dr. Henry H. Goddard, and others. In the birth registration section Dr. William H. Davis of Boston presented the results of an exceedingly interesting study into the relation of stillbirths to nationality, occupation and economic conditions among the various classes of the population of Boston.

Before the section on continuation schools it was proposed by several speakers to utilize these educational agencies for the instruction of men and boys in domestic economy and home-making. If such measures are intended to fit men for the home, while their wives make shoes and cotton cloth in the factories it will seem to many that the proposal, if applied, would act as an unfortunate palliative, while what is needed is cure through economic readjustment. However, an enhanced sense of duty toward the home on the part of the male members of the family is highly desirable, as is also the better comprehension, on their part, of the problems of home economics.

The report contains the constitution and by-laws of the Association, a membership list, and list of affiliated societies. The names of the Association's officers are given, together with the lists of directors, committee members, etc. Dr. Emmett Holt of New York City is the president of the Association for 1912–1913. It is announced that the fourth annual meeting will be held in Kansas City, Mo., October 23–25, 1913.

Donald B. Armstrong, A.M., M.D.

HEALTH DEPARTMENT REPORTS AND NOTES.

TO STATE AND MUNICIPAL HEALTH OFFICERS.

This new division of the Journal is specially designed to be of use to active Health Officers of the countries represented in the American Public Health Association. It will be unable to serve its true function unless the Health Officers are willing to coöperate by sending to the Journal copies of their reports, bulletins, new ordinances and personal information which will be of general interest. Furthermore it would be distinctly desirable if communications on subjects of general interest are submitted for publication in this division of the Journal. The management will further welcome any suggestions from Health Officers for the improvement of this division. All communications should be addressed to Selskar M. Gunn, Managing Editor, American Journal of Public Health, 755 Boylston St., Boston, Mass.

REPORTS.

Los Angeles, Cal.

During the fiscal year ending June 30, 1912, there were reported 5,267 deaths, giving a death rate of 15.05 on an estimated population 350,000. It seems to be more desirable to have the morbidity and mortality statistics extend from January 1 to December 31, even if the financial year ends June 30.

The population of Los Angeles has increased during the last decade more than threefold; in 1901 being 102,000 and in 1911, 350,000. The need for a sanatorium for the care and treatment of cases of tuberculosis is pointed out. The only accommodation for curable cases who are unable to pay is at the Barlow Sanitarium which is limited to a capacity of four beds. The need for more tuberculosis nurses is also well indicated, there being only one at the present time.

The health officer, Doctor L. M. Powers, also states that, "There should be a crew of scrub women in connection with the fumigation department who should scrub walls and floors for those unable or unwilling to renovate infected rooms."

One hundred and seven cases of smallpox were reported with eight deaths, which is the most extensive and most fatal epidemic since 1899. In this connection it is interesting to note that virulent smallpox was introduced presumably from Old Mexico and there were present at one time in the city two forms of smallpox, the virulent and the mild form, well demonstrating the differences in virulency in different epidemics of this disease.

Scarlet fever was prevalent during the year and 540 cases were reported. However, only six of these ended fatally, giving a fatality percentage of 1.1. Two hundred and fifty cases of typhoid fever were reported with forty-three deaths. The report states that the great majority of cases received the infection from outside sources. In referring to whooping cough, of which there were 452 cases reported with 15 deaths, Doctor Powers has the following to say with regard to its control: "The difficulty of ascertaining whether a child has entirely recovered or not, together with the well-known fact that fresh air and an outdoor life are so highly essential

in the treatment, speaks rather strongly against quarantine, consequently, while the children are excluded from school and every effort made to keep them from attending public places, the houses are not quarantined."

Eighty-three cases of trachoma, a disease which was unknown in the city a few years ago, were reported.

The report of the city chemist, Mr. Erwin H. Miller, brings out the interesting point that there are two milk standards, the city standard and the state standard. Twenty-two per cent. of the samples were below the city standard and 10 per cent. below the state standard. The standards themselves are not indicated.

Doctor R. B. Durfee, the city bacteriologist, reports that of the 402 milk samples examined bacteriologically, only 29 were above the limit. Here again the legal limit is not indicated.

The report of Mr. George H. Hart, the chief milk inspector, gives indications of very considerable activities. The total supply is produced on 1,461 dairies and the daily consumption approximates 35,074 gallons of milk which come from nearly 23,000 cows. The average score of the wholesale dairies was 48.58 per cent. and of the retail dairies, 51.4. It is stated that the use of the scorecard system, which has been carried on since January, 1911, has not succeeded in raising the standard of the dairies as much as it should have done. The reason for this is accounted for by the fact that the authorities have not set a minimum standard to score below which a dairy would be excluded. The fight over the tuberculin test is referred to. The city council in November, 1911, passed a Tuberculin Test Ordinance which provided that all cows supplying milk to the city would have to be tested by the Health Department without any charge to the dairymen. The milk from reacting animals was to be admitted to market for three years provided it was properly pasteurized. The dairymen organized against this ordinance and started a referendum petition concerning it. Mr. Hart states that "By a misrepresentation of facts, these petition circulators succeeded in getting enough qualified voters to sign the petition to hold up the enforcement of the ordinance until it had been submitted to a popular vote of the people.

"This election was held May 28, 1912, and the ordinance was defeated by a majority of 5,000 votes. Money to conduct the campaign was generously contributed by the opposition and their campaign of misrepresentation so moulded the previously uninformed public mind against the tuberculin test that it was impossible for the Health Department without funds and with the assistance of a comparatively few private citizens to get the truth properly before the people.

"By the defeat of this ordinance Los Angeles has taken a long step backward in the improvement of its milk supply."

The loss of time of milk inspectors in going from place to place is emphasized and it is stated that it would be an economical step on the part of the city to allow the milk inspectors $125 per month (they now get $110) with the understanding that they provide themselves with automobiles, which they are willing to do.

Mr. J. R. Caldwell, the bakery inspector, states that "The delivery of bread to homes and stores is now done in a more sanitary manner, most of the producers wrapping their bread in an oiled, moist-proof and dust-proof paper, which also prevents the attack from flies while the bread is in transit from baker to consumer. This also prevents soiled hands of drivers, grocery men, etc., from coming in contact with the bread."

Reports of school inspection, nurses, and chief sanitary inspectors are also given. The total expenditures amounted to approximately $90,000, of this $72,600 was for salaries. The actual salaries given to the various officials are not enumerated.

This is an interesting and instructive report and gives evidence of efficiency on the part of the Health Department.

Toledo, Ohio.

One of the most important items of information in the annual report of the Board of Health of this city is the announcement of the establishment of a Chemical and Bacteriological Laboratory. Toledo, with a population of over 170,000, is apparently one of the last of the larger cities of the country to establish such a laboratory.

Doctor B. Becker, health officer, in discussing the appropriation of the Health Department gives the following information:

"The tax levy for our department in 1903 was .35 mills; 1904, .30 mills, and in 1908, .20 mills, and has since remained at the latter figure until 1912, when the levy was fixed at .125 mills. The last named figure will bring in about $25,000. This sum gives us about 14 cents per capita on the estimated population, to be spent for the health of the citizens of the city of Toledo; Cleveland spends 30 cents for the same purpose; Cincinnati, 23½ cents; Columbus 23 cents, and Buffalo just now is endeavoring to get an appropriation of $1 per capita, and in the other named cities the Health Departments are asking for increased funds."

The need for a proper recognition of the importance of the Health Department on the part of the city council is well indicated. The estimated population for 1911 is given at 172,899. The death rate for the year, including non-residents, was 14.93, and excluding non-resident deaths at the state hospital, 12.75. There were 39 deaths from typhoid fever as compared with 63 in 1910. The Health Officer states that "Under usual conditions it seems to be agreed that a death rate from typhoid fever of 10 to the 100,000 of the population may be justified." Just what the justification is, is not indicated. The vast majority of the typhoid fever cases reported were found to occur in houses which were supplied with water from surface wells, which in most instances were found to be contaminated.

The health officer points out that the Police and Fire Departments are enjoying the benefits of pensions and is of the opinion that a pension fund for the sanitary officers would be proper and timely.

There are appended to the health officer's report, the reports of various divisions of the department. The report contains no financial statement. On page 23, there is given a "Comparative Mortuary Table from 1880 to 1911." The death rate per thousand is given in various forms; for example, in 1898, 10.332 pl.; 1900, 12.31½; 1904, 11.348; 1908, 11.2028. Just why these figures are given in such extraordinary variable ways is not indicated.

Buffalo, N. Y.

Dr. Francis E. Fronczak starts out his report with the statement that the death rate for Buffalo for 1911 was 14.35 and that this is perhaps the best proof of the efficiency of the Department of Health.

In referring to the subject of infant mortality, Doctor Fronczak writes as follows:

"Many of the young mothers are absolutely ignorant of the fundamental principles of rearing a child. We study the various breeds of animals, we try to improve fruit and grain, we teach the farmer how to look after his product, and yet very little is done in reference to teaching mothers of children. A 'School for Mothers' is imperative, where prospective mothers and those who have already given birth may be taught how to look after their offspring. It is absolutely necessary that immediate steps be taken with this important subject."

The pressing need for a hospital for advanced cases of tuberculosis is well discussed. It is estimated that there are 6,000 people in Buffalo suffering from this disease from which 500 persons succumb during the year. Doctor Fronczak's appeal to the Common Council is worth repeating:

"Can we continue to lose 500 people annually—men and women who otherwise ought to be the very flower of humanity,

because we cannot agree on a site for such a hospital, or because the tax rate is liable to be somewhat increased. Philanthropists, scientists, physicians—all who have studied the question—have been pleading with your honorable body for years to build this refuge for poor dying consumptives. For God's sake, how long do you want to continue to be urged? How many thousands more are to be sent to premature graves?"

The health officer refers to the work of the Bureau of Child Hygiene. The department is a very great believer in educating the public and during the past year hundreds of lectures on matters relating to sanitation, prevention of disease, proper foods, ventilation and other subjects have been given. The members of the department most willingly deliver lectures at no additional expense to the city, provided the city will supply lantern slides, films, etc.

Dr. Franklin C. Gram, the registrar of vital statistics, reports 10,546 births, giving a birth rate of 24.22. He urges the adoption by the school department of a rule which would require all pupils on entering school to furnish a birth certificate, and points out that as most pupils enter at about their fifth year, the omission of birth registration would be discovered and could be rectified while the necessary parties thereto were still available.

The report of the Bureau of Child Hygiene is very full and comprehensive, and it is well indicated that this bureau is cooperating with other city departments and private organizations which are interested in the welfare of children.

An interesting report by Dr. William G. Bissell, bacteriologist, on the various methods for purifying water supplies for public schools is given. Dr. Herbert M. Hill, city chemist, made some investigations during the year in the ventilation of school rooms and found bad conditions. He recommends the attachment of an automatic recording gauge to each ventilating fan; the regulation of thermostats on the wall of each room to correspond to a temperature of 68° in the middle of the room; and the installation of hygrometers in each room to show the moisture present. Doctor Hill states that the requirement of a relative humidity of 70 per cent. is too large for so cold a climate as Buffalo and that it would seem better to ask for a moisture content of 40 to 50 per cent. to maintain this all the time during the school sessions.

Reports of the Bureau of Food and Drugs and Sanitation are given which contain much valuable material. All of this report is extremely interesting and leaves one with the very firm belief that the Health Department of Buffalo is adequately performing its duty.

DEPARTMENT NOTES.

A New Precaution against Typhoid Fever.

"At a meeting of the Board of Health of the Department of the City of New York, held March 25, 1913, the following resolution was adopted concerning the provision of privies by contractors and their duties in regard thereto. It was designated as section 37a of the Sanitary Code, and reads as follows:

"'Section 37a. Contractors or builders shall provide or cause to be provided temporary privies for the use of the men employed during construction work, at some convenient place upon the premises, or which shall be readily accessible, and the same shall be properly screened to prevent the entrance of flies thereto. The contents of such privies shall be disinfected and removed and shall not be allowed to accumulate thereat. Contractors, builders or other persons having the management and control of construction work shall prevent the commission of any nuisance by workers, employees or other persons in and about such work or premises connected therewith, and require workers and employees to use the privies so provided.

"'It is hereby made the duty of each

owner or occupant of any premises on which a privy is located or used to cause the same to be properly screened, so that flies shall not have access thereto or to the contents thereof.'"

New York Department of Health, Weekly Bulletin, March 29, 1913.

Venereal Disease Reports.

"Blanks for reporting gonorrhoea and syphilis have been sent to all city health officers and are now being mailed out to village and township health officers. These blanks are similar to the forms used in New York and California. Cases are to be reported by number, symbol or the patient's initials. It is hoped that the physicians will cooperate with the health departments in this work. The problem of handling the venereal diseases has not been solved satisfactorily in any community. It logically rests with the health departments to restrict these diseases and only by cooperation on the part of physicians can it be done. In many instances it will be to the public advantage to report to the local health officer the names and history of certain cases. Full reports are to be made of cases of ophthalmia neonatorum."

Public Health, Michigan State Board of Health, February, 1913.

The Physician and Communicable Diseases in Montclair.

In a recent hand book issued by the Board of Health of Montclair, N. J., the duties and responsibilities of the practicing physician as regards communicable diseases are outlined in the following way:

"He must report in writing to the Board of Health every case of every communicable disease that is brought to his attention, within twelve hours after he is reasonably sure of a diagnosis.

"He must certify that all abnormal discharges have ceased before asking to have a scarlet fever patient released.

"He must exercise the same care to prevent the spread of a communicable disease that he expects the nurse and parents to take.

"A medical inspector must report every case of communicable disease that he sees in the school in the same manner as if it occurred in his private practice."

Household Cleanliness and Yaws.

"We have with us some of the tropical diseases, but not all, thanks be. Yaws, for example. A recent trip to Jamaica emphasizes how grateful we ought to be for that. The disease is quite prevalent there. Not so much in Kingston, but in the poorer suburbs, and in the country. The natives believe they have to have it and make no provision against it. In fact, they treat it like measles—try to get it while they are young and have done with it.

"As a matter of fact they need not have it at all. Few Europeans or Americans, even where the disease is most prevalent, ever contract it. For a while it was not known why, but now it is pretty well understood. The disease is transmitted by bed bugs. Those who live in environments that do not harbor bed bugs don't get yaws.

"It is hard to imagine a more loathsome disease than yaws. It consists of ulcers, which may be sprinkled over the entire body, or may be confined to some particular area. These ulcers may be many or few. At best they last for several weeks, and may last for months or even years.

"They are seen mostly in children, because one attack confers immunity. When children have them and get well, they rarely have the disease a second time. But they are not confined to children. Any age may become infected.

"The eternal lesson taught by this disease is that household cleanliness prevents it."

Florida Health Notes, March, 1913.

Birth Records and Infant Mortality in Tenements.

"The birth records of the Department of Health are not made use of by the Tenement House Department of the city, for the law creating the latter department does not provide for the keeping of records of infants born in tenement houses, although it does

provide for the keeping of records of all deaths occurring therein. These latter records are obtained by the Tenement House Department from the Department of Health. Those who are interested in the subject of infant mortality appreciate fully its value as an index of sanitary conditions, and it will, perhaps, surprise them that the Tenement House Department has made no effort to compile data concerning the mortality among infants living in tenements. From studies made by the registrar of the Department of Health, it has been found, as one would expect, that the infant mortality in tenement houses greatly exceeds the infant mortality of the city at large. The latter was found to be about 106, while that of the tenement house section varied between 140 and 300, per 1,000 during 1911. There would seem to be a necessity for a special study of infant mortality in tenement houses for the purpose of making comparisons with that of private dwellings and institutions."

New York Department of Health, Weekly Bulletin, March 29, 1913.

Progress in California.

Dr. W. A. Sawyer in the January, 1913, *Bulletin of the California State Board of Health* has the following to say with regard to progress of the State Board of Health Laboratories made in 1912:

"The year 1912 has been one of notable progress in the laboratory. It saw the beginning of the manufacture of antirabic virus at the laboratory for use by the State Board of Health in administering the Pasteur treatment. It saw the number of laboratories at which the Pasteur treatment for the prevention of rabies is administered increased to eight. It saw a new branch laboratory established at Sacramento for the special purpose of rendering service more promptly to northern California. It saw the number of depositories for mailing outfits for sending specimens and cultures to the laboratory increased to 159. It saw several important investigations of outbreak of disease carried on under the new division of Epidemiology. It saw the beginning of an investigation into the method of transmission of infantile paralysis, and it saw, in this work, the establishment of a precedent for research through which the state will discover and test its methods of limiting and eradicating epidemic diseases."

Rabies in Florida.

An article in *Florida Health Notes* for March, 1913, concludes as follows:

"The conclusion from observed and proven facts warrants the statement that the disease can be stamped out in the state. Once this has been accomplished, it cannot be revived excepting by importation from other states and sections.

"There is just one way to stamp it out, and that is to enforce the laws regarding dogs, for it is perpetuated through dogs. First, insist that every owner of a dog shall pay a license for that dog. Second, insist that every dog allowed to run at large shall be effectively muzzled.

"That's all, excepting to insist that city and town and county authorities charged with the enforcement of these laws shall do their duties or give place to those who will.

"A good many dogs are not worth the license fee, and the license tag should be the permit for every canine to live. If necessary, extend the operation of these laws to cats—and cats are a nuisance in other ways besides this.

"Good lawyers declare that the municipality having such laws is liable for damages resulting from the non-enforcement of these laws. But why wait for such action? Why should such sacrifices be necessary to arouse public sentiment, when an evident danger of such seriousness constantly menaces the people in every community in Florida?"

The State Screen Law.

"Attention of food handling establishments of every description—bakeries, canneries, packing houses, groceries, meat markets, confectioneries, restaurants, hotels, etc.—is hereby called to chapter 473, acts of 1909, section 4, of State Sanitary Food Law, which prescribes:

"'That the doors and windows, other open-

ings of every food-producing or distributing establishment during the fly season shall be fitted with self-closing screen doors and wire window screens of not coarser than 14-mesh wire gauze.'

"The law requires screens to be in place by April 1."

Monthly Bulletin, Department of Health, Chattanooga, Tenn.

What Every One Should Know About Hookworms.

"1. The largest hookworm is only about three-fourths of an inch long—the male a little smaller.

"2. The adult hookworms live in the alimentary tract in human beings.

"3. They lay large numbers of eggs in the alimentary tract.

"4. These eggs are passed out in the stools.

"5. Where sewage is properly disposed of the eggs are destroyed and no harm is done.

"6. But where no privy even is used the eggs are deposited on the ground where they hatch, and

"7. In a few days the baby hookworms are ready to attack the feet of any barefoot child that chances to come along.

"8. This they do by burrowing into the skin, producing what we know as ground itch.

"9. They get through the skin into the circulation, through which they pass till they reach the lungs.

"10. There they are coughed up and swallowed.

"11. When they reach the intestines they grow up to be adult hookworms, and the child begins to get pale.

"12. This child in turn begins to deposit hookworm eggs as the one before him did, and so on in an endless cycle.

"13. If you suspect your child has hookworms write the State Board of Health."

Florida Health Notes, January, 1913.

Wormy Vegetables.

"The first of the new resolutions amends section 42 of the Sanitary Code to include wormy vegetables among foods classified as 'unsound' and forbidden to be offered for sale or sold for food anywhere in New York City. A recent prosecution by the Department of Health, brought under this section of the Sanitary Code in its old form, failed on account of a doubt on the part of the judges as to whether 'wormy' vegetables could be considered unwholesome and unfit for human food. The present amendment of the code should obviate such a contingency in the future by prohibiting the sale of 'wormy' vegetables as such. Nuts, figs, and dates as such or in candy are especially aimed at in this provision, and are for this purpose classed as vegetables. The amended section reads as follows:

"Section 42. No meat, vegetables or milk, not being then healthy, fresh, sound, wholesome or safe for human food or the meat of any animal that died by disease or accident, shall be brought into the City of New York or held, kept, offered for sale, or sold for such food anywhere in said city; nor shall any such food, substance or articles be kept or stored therein. The term 'meat' as herein used shall include fish, birds, eggs and fowl; the term 'vegetables' shall include any product, substance or article used as and for human food other than milk or meat; the term 'not sound' shall include any vegetable that is wormy, and all wormy vegetables, when used or intended for use as herein mentioned, are prohibited. For the purpose of this section, any meat, vegetables or milk in possession of, or held, kept or offered for sale by, a dealer in food, shall *prima facie* be deemed to be held, kept and offered for sale as human food."

Weekly Bulletin, New York Department of Health, February 22, 1913.

Fort Wayne Board of Health.

"In no city can there be found a more active and efficient board of health than in Fort Wayne. Very few of the city boards have felt that they should take up food work although acknowledging it was very important. Terre Haute has done a good deal of work in the way of protecting the people against bad food conditions, and Fort Wayne has certainly done excellently. Dr. Eric A. Crull, health officer of Fort Wayne, got out a certificate of excellence.

"After inspection of a grocery store or food market of any kind, and it is found worthy, a certificate of excellence is given. Said certificate is printed in blue, is six and one-half inches by nine inches, on excellent stiff paper. It bears the red seal of the city Board of Health. Grocers and restaurants who have been awarded these certificates of excellence are very proud of them, displaying them in good frames where customers can see them. This move by the Fort Wayne board is an excellent one, and so far has produced excellent results."

Monthly Bulletin, Indiana State Board of Health, December, 1912.

An Investigation of the Common Fork at the Saloon Free Lunch Counter.

"The sanitary condition of the common fork in use at the saloon free lunch counter, as found in this city, has been investigated by the laboratory of the Louisville Health Department, and the methods employed, the findings and the recommendations are as follows:

"Inquiry shows the frequent use of a food utensil, usually a fork, by the visitors to the free lunches at saloons. This utensil is used to secure portions of food as pickle, cheese, sausage, sauerkraut, etc., as desired by the individual; it is largely used to convey such food to the mouth, after which it is returned to a glass containing some cold water, only to be picked up and used in the same way by succeeding persons. This very personal tool comes, therefore, into more or less intimate contact with the saliva of the mouth and the mucous membrane of the tongue and lips. In view of the fact that we frequently find disease-producing bacteria in the secretion of the mouth and throat, and also on account of the fact that not only diseased people, but also healthy carriers of the seeds of disease are often largely present in a city population, it is important to limit the distribution of disease as much as possible. The following germs would illustrate the possible danger of transmissibility by means of the common fork:

"Syphilis, through sores in the mouth, found most often in the adult; pneumonia germs, found in healthy carriers; the streptococcus, a germ capable of carrying a variety of serious spreading inflammations, *i. e.*, septic sore throat, erysipelas, etc., and a germ that is an important factor complicating many other diseases; the germ of epidemic meningitis, which is found carried in the mouth and throat secretions of many healthy people; the germ of boils and localized inflammation; diphtheria bacillus, tubercle bacillus, etc.

"Sixteen saloons representing the various grades were visited and the material adhering to the fork and a sample of the water bathing the fork were taken for test purposes."

The test methods employed are given in some detail and the article concludes with the following:

"No chemical preservatives were found in the fork water. The animal inoculations made eighteen days ago will require longer time before the full value of that test can be obtained. Streptococci were found in thirteen out of the sixteen specimens examined. By this cursory and preliminary report the common fork shows its contact with the lining of the mouth and the frequent presence of the streptococcus is alone good reason for abolishing the common fork. It is suggested that the food be prepared beforehand in the form of sandwiches, etc., and handed out to the individual, or else each customer be given food on a plate with individual utensils."

Department of Health, Louisville, Ky., February 1, 1913.

Why Births and Deaths Should be Reported.

The reasons why births should be recorded are well epitomized in the *Press Service Bulletin* of the Chicago Department of Health for April, 1913:

"1. That the birth, date of parentage and other essential information for statistical and identification purposes may be collected and officially recorded and preserved.

"2. That the ages of school children may be definitely known, thus aiding in the intelligent enforcement of compulsory school laws.

"3. That laws regulating the employment of children in shops, stores and mills may be

enforced and the children of the poor thereby protected.

"4. That all children under the legal age may be prevented from being forced to work in hazardous or dangerous occupations.

"5. That employers who comply with the laws affecting child labor be protected from the competition of those employers who violate such laws.

"6. That in prosecutions dealing with 'the age of consent' they may be based upon authenticated records, and not determined by guess work and faulty memories.

"7. That, as often happens in the case of deaths, litigation in the matter of inheritance and estates, all matters in dispute may be settled by the easy obtainment of definite knowledge of the ages of all persons interested or affected by the matter at issue.

"8. That the American-born children of foreigh-born parents may have certified evidence of their American birth and thus be able to establish their citizenship when visiting the countries where their parents were born.

"9. That it may be made easy to determine the legal or voting age of all persons seeking to exercise this inalienable right of citizenship.

"10. That blindness may be prevented by prompt medical attention to the infected eyes of the new-born.

"11. That needless sickness and death among both mothers and babies may be prevented by immediate attention by those engaged in organized child welfare work.

"12. That health officials and all those engaged in health and community welfare work may be able to wage an intelligent and effective warfare against the preventable ills of child life and thus bring about higher standards of health and happiness."

What is the Answer?

"If health work saved $5,000,000 in preventable sickness and death in our state last year, will some one please explain why we are afraid to risk over $150,000 in state, county and municipal health work combined to effect a still greater saving when our annual loss from preventable diseases still ranges around $40,000,000? If a business man could save an annual loss of $1 by spending 75 or 80 or even 90 cents, don't you think he would do it? Why, then, is not this great state run on more of a business basis? Why are we afraid to spend over three or four cents to save a dollar?"

Bulletin North Carolina State Board of Health, March 17, 1913.

Coöperation.

"Taking the public into full partnership in the public health enterprise offers tremendous opportunity to the strong man in the health office. The other kind will do well to lie low and attract as little attention to himself and his work as possible."

Bulletin of the Health Department, Asheville, N. C., January, 1913.

Industrial Poisoning Due to Flat Finish Paint.

"This interesting article, in connection with the campaign against occupational diseases, appears in the *Lancet Clinic* and was contributed by Dr. J. H. Landis, health officer of Cincinnati. He outlines some of the symptoms as described by painters using these secretly mixed paints. The fact that during the application of flat finish paints fresh air is excluded from the room only exaggerates the symptoms by increasing the humidity. Some of the men were compelled to discontinue work altogether during rainy weather. Practically all men described the following symptoms: dizziness, severe frontal headache and a feeling of "dopiness," defective vision, and in one case almost complete loss of vision for a short time resulted. The eyes burn, conjuntiva is red, lids are swollen and there is lacrimation. In some a cough develops. Loss of appetite is a constant symptom. Constipation occurs in about 50 per cent. of cases. About the third day vomiting occurs. When turpentine is used in paint this does not occur. Steady continuous pain in the abdomen under short ribs is a pretty constant symptom. The kidneys and urine are effected in some cases. One man was rejected for life insurance on

account of albuminuria, due to the effect of his kidneys.

The men tried various combinations of turpentine, oil, benzine, gasoline, coal oil and japan. None of these combinations produced the symptoms described. Several men were of the opinion that an oil sold by distillers and used in the manufacture of paint might be the cause. Lead is not contained in these paints, so is excluded as a cause. Wood alcohol is suggested by the eye symptoms. Amylacetate was considered, but odor was not suggestive of this. The matter has been placed in the hands of Dr. Alice Hamilton, government expert on lead poisoning, for further investigation. Physicians who encounter this form of poisoning are requested by the writer to furnish any information that they may have obtained in treating cases."

Ohio State Board of Health, February, 1913.

PERSONAL.

Honor to Whom Honor is Due.

"It too often happens in our work-a-day life that men, who have been pioneers in a good cause do not receive the praise to which their far-seeing vision and achievements entitle them until they have passed out of this life. The doctors of Wake County do not defer to put on record their appreciation while their distinguished associate is still alive and an active leader in a good cause of which he was a pioneer, and so at a recent meeting of the Wake County Medical Society passed a resolution containing a singularly appropriate and discriminating appreciation of the services of Dr. Richard H. Lewis has rendered in behalf of public health and high standard of the medical profession in North Carolina as secretary of the State Board of Health from the time it was organized in 1877 until he resigned in 1909. With meagre support and lack of knowledge by most people of the laws of health and sanitation, Doctor Lewis was, indeed, as the resolution says, "a benefactor to his day and generation." The late Governor Aycock declared that Doctor Lewis was "distinguished for prudence in dealing with the legislative committees, persuasive of speech, always in thorough control of himself, always dependable, careful in framing laws and explaining them, and withal a great patriot and wise counselor." These qualities have not only given Doctor Lewis his position in his native state, but his worth as a man and leader in his professsion has been recognized in the Republic as well as in the state, for he has not only been president of the North Carolina State Medical Society but he has been president of the National Conference of State and Provincial Boards of Health and president of the American Public Health Association.

Editorial, News and Observer, January 28, 1913.

PUBLIC HEALTH NOTES.

An Important Conference.

A meeting of great interest to the members of the American Public Health Association was held in New York City on April 12 at the call of the Council on Health and Public Instruction of the American Medical Asso- Dr. Frederick R. Green, the s cary of this council, had previously canvassed the executive secretaries of the most important organizations interested in public health work and many of its phases as to the desirability of there being a conference to take up the general questions of the possible dangers of duplication of effort and expense and to find out whether or not a closer co-operation between the various organizations might be of value.

Mr. John M. Glenn, Director of the Russell Sage Foundation, was elected Chairman of the meeting, and Mr. John B. Andrews, Secretary of the Association for Labor Legislation, Secretary.

The *Survey* for April 26, epitomizes the subjects discussed as follows:

"1. A central national health organization, composed of one representative (perhaps the executive officer) from each of the fifty-odd national health organizations in the United States.

"2. An annual conference of this central organization in January, at which might be discussed one topic of paramount importance in the health field, to the end that the work of the central organization during the year be centered instead of scattered.

"3. Establishment of a central bureau or clearing house with an executive secretary and facilities for collecting and distributing information relating to the work of the various health organizations represented.

"4. Provision of $10,000 to $20,000 for the expense of the central bureau.

"5. Appointment of a committee (of seven perhaps) to study and carry forward the plans of the bureau of health organizations."

The following resolution, which is of particular interest to the American Public Health Association, was finally adopted:

"RESOLVED, that it is the sense of this meeting that we should organize as a conference, either independently of the American Public Health Association or as a section thereof or of any other organization which should later be decided, after investigation by a committee to be appointed to work out details.

"RESOLVED, that a committee consisting of fifteen members, of which five shall constitute a quorum, shall be appointed by the chairman at his convenience, to report at a subsequent meeting."

Canadian Public Health Association.

The Third Annual Congress of the Canadian Public Health Association will be held in Regina, Sask., on September 18, 19 and 20. This will be the first occasion on which the members of the association have met in the West.

At the Congress held in Toronto last year, communications were read from the city of Regina and the government of Saskatchewan, inviting the members to make Regina their next meeting place. These invitations were unanimously accepted, and a hearty welcome will therefore be extended to the Association by Saskatchewan's Provincial Government and its Capital City.

The Provincial Government realizing the educational value of such a conference and the stimulation of interest which it will effect in matters of Public Health, have decided to bring all the medical health officers of the Province, some 200 in number, to the Congress.

There is, therefore, every indication that the attendance will equal, if not surpass, that of the two previous meetings in Montreal and Toronto.

The Secretary to the Local Arrangements Committee is Mr. R. H. Murray, Engineer to the Bureau of Public Health, Regina.

The Cost of Sanitation on the Isthmus.

"Reports have gone out from the Isthmus, both from those in authority and from newspaper writers, to the effect that sanitation has been very expensive; that when the work shall have been finished, sanitation will have cost 5 per cent. of the total expense. This comes about from getting the expenses of the sanitary department confounded with those of sanitation. The sanitary department spends a good deal of money that has no relation whatever to sanitation; for instance, more than half the revenues of the sanitary department are spent on hospitals, dispensaries, etc., things which have no relation whatever to sanitation. It is just as misleading to call such things on the Isthmus 'sanitation' as it would be here in Baltimore to charge to the health department the expenses of all hospitals and dispensaries and the incomes of the physicians and nurses. If this were done, the expenses of the Health Department of Baltimore would amount to a very large percentage of the total expense of the city government. As a matter of fact, the sanitation on the Isthmus has cost us about $400,000 per annum. This is a little more than one cent per day per capita for the total population; and when we are through, we shall have spent on sanifation about $4,000,000 instead of $20,000,000, as has been stated, 1 per cent. of the total cost of the canal instead of 5 per cent.

"I am anxious to have this misunderstanding corrected because the matter has a far wider application than to our local affairs on the Isthmus. If we hope that our work is going to be of assistance to other tropical countries, we must show that the expenses of sanitation are within the limits of their financial ability. If the South American governments are told that it has cost the American government $20,000,000 for the sanitation of this small territory of 500 square miles on the Isthmus for ten years, they will all see at once that a similar work for themselves would be entirely beyond their financial ability. But if they are informed that it has cost the Americans a little more than a cent a day per capita for the work, they will know that they are financially able to do the same. This can certainly be done by all these countries, as far as their larger and infected cities are concerned. As it is a matter that may be of great use to our tropical neighbors, both north and south of Panama, I make no apologies for bringing it up on this occasion."

An address by Colonel Gorgas, printed in the *Journal of the American Medical Association*, March 29, 1913.

International Congress on School Hygiene at Buffalo August 25–30.

All the leading nations, every state in the Union, every college and university of note in this country, and various other leading educational, scientific, medical and hygienic institutions and organizations, as well as various women's organizations, will be represented at the Fourth International Congress on School Hygiene in Buffalo, August 25–30, according to a preliminary statement just issued by Dr. Thomas A. Storey, of the College of the City of New York, Secretary-General of the Congress.

President Woodrow Wilson has accepted the honorary office of Patron of the Congress. The president of the Congress is President C. W. Eliot. The vice-presidents are Dr. William H. Welch of John Hopkins University, and Dr. Henry P. Walcott, president of the recent International Congress on Hygiene and Demography and chairman of the Massachusetts State Board of Health.

It is the aim of the organizing committee in charge to bring together at Buffalo a record of men and women interested in improving the health and efficiency of school children, and to make this Congress—the first of its kind ever held in America—one of direct benefit to each individual community. A program of papers and discussions is now being arranged covering the entire field of school hygiene. There will be scientific exhibits representing the best that is being done in school hygiene, and also commercial exhibits of educational value.

Nor will the entertainment of delegates in any way be neglected. Buffalo has just subscribed $40,000 toward covering the expenses of the Congress. The Buffalo citi-

zens committee has planned for a series of social events, including receptions and a grand ball, a pageant in the park, and excursion trips to the great industrial plants and to Niagara Falls.

The Congress is open to all persons interested in school hygiene, who may join as regular active members upon the payment of a $5 fee. Application for membership should be sent to Dr. Thomas A. Storey, College of the City of New York, New York City.

The Cleansing of Milk Vessels.

"That some American officials are fully alive to the need for cleanliness is evident from a report of proceedings which were taken in New York against three carmen in the employ of a milk supply company for having in their possession milk cans which after being emptied of milk had not been cleansed."

Further, the *Medical Officer* for March 15, 1913, restates that part of the Sanitary Code of New York State which requires that all milk receptacles shall be cleaned when emptied, and which holds responsible the persons in whose possession an unclean receptacle is found. In reference to the recent case in which the state figured against the carmen the *Medical Officer* says:

"In taking action against the carmen, the New York State authorities would seem to have had some difficulty in getting hold of the real delinquents, who would appear to have been the persons to whom the milk had been delivered. The defending counsel, while admitting the offence, maintained that it was in the same category as that of a man found with burglars' tools in his possession. The reply of the prosecutors was that statistics would doubtless show that unclean milk receptacles were in point of fact as dangerous to the community as burglary tools. The chief justice, who was one of the judges before whom the case was tried, said that when one considered the physical conditions which surrounded a cosmopolis like New York City; the crowding together in small space of so many individuals; the dirt, filth and germs which were bound to accumulate in spite of most strenuous efforts; the poverty, sickness and uncleanliness of so many citizens, it was at once apparent that the greatest care must be taken in the transportation of a commodity like milk, which was daily used practically in every family, and which was without doubt more susceptible of taking up germs and scattering them broadcast than any other product. After this dictum it is unnecessary to state that the prosecution was successful."

Midwives: Registration or Eradication?

The *Boston Medical and Surgical Journal* for March 20 presents articles by two writers, one of whom advocates the registration of midwives, while the other urges her elimination.

Dr. E. F. Cody, who thinks that the midwife is a necessary evil, may be quoted as follows:

"She is an economic necessity. We agree that she is a nuisance, a relic of mediævalism and an unnecessary evil and that she must go. But she does not go. We have ignored her and prosecuted two of her kind in this state, and last year she delivered three thousand women in our cotton mill cities.

"Since we cannot abolish the midwife, we can at least teach her cleanliness, the conduct of normal labor, and to recognize the onset of complications. We can secure legislation enabling constituted authorities to adopt rules and regulations for such instruction and for her admisson to practice and exclusion from practice and to regulate and supervise her work."

On the other hand, J. L. Huntington, advocating the absolute elimination of this type of practitioner, indicates his attitude in the following words:

"It would seem as if we had reached that stage of social education where the rights of all should be recognized and respected. How can we with any justice suggest one class of service for the poor and ignorant and another for the well-to-do and educated? No other branch of medicine tolerates this dual standard—two classes of practitioners, one semi-trained and the other thoroughly educated. This is a problem to be solved by the obstetrically trained physicians and not by pedia-

tricians, statisticians and board of health men unassisted by expert obstetrical advice. No man unless he is thoroughly trained in obstetrics is likely to realize the utter hopelessness of ever solving the obstetrical problem of the poor by the services of the midwife.

"The course lies open. Massachusetts is in a position where public ignorance and apathy will readily allow the adoption of the midwife system—a system which has never proved successful in any country. But if we as obstetricians will firmly stand our ground and by exerting every effort educate the community in the importance of obstetrics, we can by the aid of our present law gradually solve the anomalous position of the midwife and place Massachusetts at the forefront in the march of Preventive Medicine."

Vital Statistics and Advertising.

"It has been the custom in the past for resorts with a favorable climate to advertise their 'pure air' as an inducement to tourists, invalids and settlers—making use, in so doing, of 'hot air,' or just ordinary 'blowing.' Now that the value of climatic conditions with reference to health can be more correctly estimated, mere statements as to natural advantages in the way of springs, air, sunshine, etc., do not carry such weight. Something more definite must be presented. Health conditions in city or resort, to be regarded as an asset for drawing visitors or permanent residents, must be based on actual figures, and many places now vie with each other in that respect. The Manitou Springs Hot Iron Club, a commercial organization, in order to attract visitors and residents, circulates a letter calling attention to the vital statistics and morbidity record of that city, as compiled by the city physician. This is a rather novel idea. As the health of its inhabitants is the best business asset which any place can have, it is good business and good advertising for business men's associations to call attention to the actual figures with reference to their city in this manner."

Journal of the American Medical Association, March 22, 1913.

School Shoes for Children.

"Amongst the items of news contained in the monthly reports on the primary schools of the German Empire is the following:—In one district the local authorities have decided to provide the children with felt shoes to be worn during school hours. This is at Pollwitz, near Glogau. The medical officer had made several complaints as to the general inefficiency of the footwear of the children, and had pointed out that it meant that the children had often to sit through the day in winter with their feet thoroughly wet. With the equipment of felt shoes the authorities have given orders that the other shoes shall be properly dried during the lesson-time."

Public Health, March, 1913.

New York City's Declining Death Rates.

"That there is cause for rejoicing among the unborn babes of the future is due to the Babies' Welfare Association of New York, to whom is attributed the reduction in the death rate among babies during 1912. The general death rate of 15.13 per cent. for 1911 was reduced to 14.11 for 1912; the rate for infants one year old or less was lowered 6 per cent.

"The association's systematic campaign of prevention of infant diseases is held accountable for the fewer deaths. We graphically see its value when we compare the infant death rate in the Bronx, one of the boroughs, with the others. Of the eighty milk stations, only three are in the Bronx. It was the only borough that did not show a falling off in the rate of infant deaths.

"The fact that the death rate can still be lowered 1-16 when preventive medicine is still in its comparative infancy as compared with curative medicine, shows what great accomplishments can be expected of this new branch of science."

The Dietetic and Hygienic Gazette, March 1913.

The Importance of Governor Sulzer's Health Committee.

"The political millennium is not so far away as we have been taught. At least its

'rosy-fingered dawn' is here with assurance of a day that shall fulfill the promises of its early messengers.

"My proof? The report of Gov. William Sulzer's 'special commission to collect facts, receive suggestions and make recommendations as to changes in the public health laws and their administration', for New York State.

"Important enough for its statements of fact and its recommendations, this report is bound to have nation-wide by-products in new kinds of social service by state health and school departments; new conservation activities by rural districts; new direction for volunteer social service; and new ways of fulfilling pledges, making friends and disarming enemies by governors and other public officers."

William H. Allen in *The Survey*, March 15, 1913.

Federal Health Expenditures.

"During 1912 the United States government spent $19,800,086.23 for 'its health departments, bureaus, and all other health activities in its various branches.' This information has just been compiled by the secretary of the treasury in response to a resolution of inquiry introduced by Senator Works of California. The estimate includes not only the Public Health Service, together with the medical and hospital work of the War Department, the Navy Department, the Department of Agriculture and the Panama Canal sanitary service, but also various bureaus and funds little known to the public at large.

"Among these last may be mentioned the International Sanitary Bureau, the International Office of Public Health, the International Conference of the Red Cross, and the International Congress on Hygiene and Demography—all under the State Department. Under the Department of Justice come the health activities in connection with the support of United States prisoners, amounting to $39,759.76 and the National Training School for Boys.

"The number of officers and employees on the federal pay rolls engaged in public health and medical service is between 15,000 and 16,000."

The Survey, March 22, 1913.

Working Mothers—Neglected Children.

"During school inspections at Dundee last year it was noted that the majority of children showing want of cleanliness were over six years of age. In many such cases it was discovered that an older brother or sister looked after the children while the mother was at work. In this connection, Dr. A. E. Kidd, S.M.O., writes:—'When one considers the fact that 54.6 per cent. of the married women under 20 years of age, 41.1 per cent. of the married women from 20 to 24 years of age, and 25.2 per cent. of the married women from 25 to 44 years of age are employed in various industries, the difficulty of proper attention being given to children is easily understood.' Doctor Kidd thinks the fact that the meal hours of the children and parents are at different times, that the parents are away at work when many of the children are setting out for school, and that in some instances the children have to play in the streets until the return of the parents from work, must result in great hardships to the children, both from want of supervision in regard to their clothing, and also in the matter of the food they receive, which, although often ample, is in many cases quite unsuitable for the wants of a growing child."

The Medical Officer, March 22, 1913.

Contaminated Vegetables.

"It is customary in investigations to discover the causes operative in the production of outbreaks of typhoid fever, to inquire, among other things, as to whether persons who have been attacked by the disease have used fresh or uncooked vegetables as part of their diet during the two or three weeks prior to the onset of the disease.

"The reason for making such inquiry is that in some localities vegetable gardens have been handled in such an insanitary manner that they have become a danger to the community, not only for the reason that typhoid

fever can be spread through the agency of vegetables, but because other serious diseases, such as amebic dysentery and bacillary dysentery, may be transmitted in the same manner.

" It has been the custom in the Orient, for no one knows how many years, to use night soil as a fertilizer in vegetables garden. In fact, the practice is so common that there is a regularly established traffic in this commodity, and owners and operators of vegetable gardens, in addition to carefully saving the excrement of themselves, their families, and laborers, make periodical trips to the nearest market for the purpose of purchasing such additional materials as may be needed. An understanding of this custom will make plain the reason why disease, due to practices of this kind, is common in oriental countries.

" The method of using the material varies in different localities. The practice is first to mix a certain amount with the soil at or near the time of planting the seed; then at later periods, when the vegetables are growing, to sprinkle a thin solution of night soil from a sprinkling can over the growing vegetables. In certain portions of the Orient it is a common thing to see a laborer walking between rows of young vegetables with a bamboo pole over his shoulder from each end of which there hangs a sprinkling can. The streams from these cans are carefully directed onto the tops of the young vegetables, and two rows can thus be treated at one time.

" In certain portions of the United States it is not uncommon to use sewage as it issues from the sewerage system of cities or towns for irrigation purposes, either by diverting it into a channel which leads through the garden, or by dipping it from polluted streams, vaults or vats, and applying it. In several communities, owners of large vegetable gardens collect night soil, and furnish, clean, and change the pails or receptacles, free of charge to the householder. In these instances the matter collected is usually mixed with the earth of the garden.

" It has been found that vegetables grown in soil infected with the germ of typhoid fever had the germs of the disease upon the leaves and stems 31 days after the soil was infected, and the same germ was found in the ground itself 35 days after it was infected. Rainfall and sunlight did not kill or remove the germ."

Public Health Reports, March 28, 1913.

The Use of the Typhoid Vaccine.

In a recent pamphlet the Department of Health of the City of New York designated the following classes of people as those who are particularly benefited by immunization against typhoid:

" *a.* Physicians, hospital internes, medical students, male and female nurses and orderlies in hospitals.

" *b.* Members of families among whom typhoid carriers have been proved to exist, or those exposed to the disease or who expect to be brought in contact with it.

" *c.* Persons who expect to travel or settle in places which are habitual foci of typhoid fever.

" *d.* Those living in regions where typhoid fever is prevalent."

The Department also announces the following general conclusion in regard to the treatment:

" 1. The practice confers a notable immunity against typhoid infection.

" 2. It reduces by three quarters the case incidence of typhoid fever in groups of individuals submitted to this method of immunization.

" 3. Under similar conditions, typhoid fever occurring in immunized persons has approximately one half the fatality of typhoid cases in persons not so protected.

"4. Typhoid fever thus is less apt to occur, and when it does occur, runs a milder course among the sick who have been immunized than among those who have not."

Insanitary Road Paving.

" Dr. R. Sydney Marsden has been repeating a warning given to the Birkenhead Health Committee several years in succession—viz., that one of the most important sanitary requirements of the borough is the abolition of the cobble paving, which still exists in a large number of the streets. He writes:—' The

crevices between the cobble stones form small catch-pits for filth of every description, and cannot be properly cleansed, even with considerable attention being paid to them. When they are neglected or only half cleansed they are a source of distinct danger, and it is therefore desirable that this form of paving should be entirely done away with, or at least its gradual but steady removal accomplished.' Doctor Marsden declares that in the light of recent scientific work on the breeding of flies and their action as disease carriers, any town which allows this kind of paving to continue must be considered as behind the times."

The Medical Officer, February 15, 1913.

Tuberculosis and Housing.

"The Paris Health Bureau has a complete record of every one of the 80,653 houses in the city, showing the sanitary equipment, the cases of sickness, deaths, and like data, and from a study of these, the bureau announces that all of the 101,496 deaths that have occurred from tuberculosis in the last ten years, occurred in 38,477 houses. The records of these 38,477 houses show that tuberculosis is concentrated in certain quarters, and that outside of this the disease is not more prevalent than other diseases."

Life and Health May, 1913.

COLORADO SPRINGS MEETING, A. P. H. A., SEPTEMBER, 9–13.

Ten miles to the north of Colorado Springs has recently been established a national sanatorium of the Modern Woodmen of America. This institution has been erected and is maintained for the free treatment of members of the society afflicted with tuberculosis. More than one million dollars has been expended in the institution.